

80% OF FISHERIES

THE UNIVERSITY  
OF MICHIGAN

*Mine*

JUL - 1 1960

MUSEUM  
LIBRARY

# COMMERCIAL FISHERIES REVIEW



Vol. 22, No. 6

JUNE 1960

FISH and WILDLIFE SERVICE  
United States Department of the Interior  
Washington, D.C.



## COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries  
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor  
H. M. Bearse, Assistant Editor

Mailed free to members of the fishery and allied industries. Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

Publication of material from sources outside the Bureau is not an endorsement. The Bureau is not responsible for the accuracy of facts, views, or opinions contained in material from outside sources.

Although the contents of the publication have not been copyrighted and may be reprinted freely, reference to the source is appreciated.

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

### CONTENTS

COVER: A cod end full of smelt taken by trawling by the M/V Active in Lake Erie. In 1958-59 the U. S. Bureau of Commercial Fisheries conducted exploratory fishing to determine the commercial availability of smelt in the United States waters of Lake Erie. (See p. 1 of this issue.)

Page		Page	
1	Exploratory Fishing in Lake Erie, September 1958-November 1959, by Reidar F. Sand and William G. Gordon		
	<b>RESEARCH IN SERVICE LABORATORIES:</b>		<b>TRENDS AND DEVELOPMENTS (Contd.):</b>
13	Fish Flour is Primarily a Protein Concentrate--Not a Substitute for Grain Flour		North Pacific Exploratory Fishery Program (Contd.):
	<b>TRENDS AND DEVELOPMENTS:</b>	31	Exploratory Bottom-Fish Trawling off Coast of Washington and Vancouver Island Planned (M/V John N. Cobb Cruise 46)
15	Fishing Vessel and Gear Developments:		<b>Oceanic Bacteria:</b>
	Equipment Note No. 4--A Method of Making Electrical	22	University of Miami Granted Funds for Extension of Research
	Trawl Cable Terminations and Connections, by Richard L. McNeely		<b>Oysters:</b>
19	Aerial Census of Commercial Abalone Fishing Continued (Airplane Spotting Flight 60-6)	32	Heavy Losses Discovered in Lower Chesapeake Bay
19	Crab Fishing Area and Intensity Studies Continued (Airplane Spotting Flights 60-2 and 60-4)	32	Virginia Biologists Use Autotechnicon to Speed up Research
21	Barracuda and White Sea Bass Survey Continued in Gulf of California, Mexico (M/V Alaska Cruise 60A1)		<b>Salmon:</b>
22	Pelagic Fish Population Survey Continued (M/V Alaska Cruise 60A2, and Airplane Spotting Flights 60-3 and 60-5)	33	King Salmon Escapement to Columbia River Spawning Grounds Good
	<b>Canned Fish:</b>	33	Migration Studies in North Pacific to be Continued
24	Distribution of Canned Tuna, Salmon, and Sardines		<b>Transportation:</b>
24	Cans--Shipments for Fishery Products, January-February 1960	33	Study of Effects of New Transportation Equipment on Food Quality Urged
	<b>Central Pacific Fishery Investigations:</b>		<b>Tuna:</b>
25	Alterations of Research Vessel Charles H. Gilbert	34	Albacore Tagged off California Recaptured by Japanese
25	Hawaiian Skipjack Tuna Research Trends, March 1960	35	United States Fishing Fleet Additions, March 1960
	<b>Federal Purchases of Fishery Products:</b>		U. S. Foreign Trade:
26	Department of Defense Purchases, January-March 1960	35	Edible Fishery Products, February 1960
	<b>Fisheries Loan Fund:</b>	35	Fish Meal and Scrap Imports, 1940, 1950, 1955-59
26	Loans Approved March 1-31, 1960	36	U. S. Imports of Canned Tuna in Brine Under Quota
27	Fishery Export Trade Promotion Meeting Announced Florida:	36	U. S. Production of Fish Sticks and Portions, January-March 1960
27	Pink Shrimp--Most Valuable Commercial Fishery	37	Wholesale Prices, April 1960
	<b>Frozen Fish:</b>		<b>FOREIGN:</b>
28	Restaurant Chains Use Half-Billion Pounds of Frozen Food a Year		<b>International:</b>
	<b>Fur Seals:</b>	39	Food and Agriculture Organization:
28	Prices for Alaska Fur-Seal Skins at Spring Auction		European Nations to Discuss Inland Fisheries
29	Canning Season for 1960 Opens with no Signs of Fish		Law of the Sea:
29	Advertising Aimed at Youth Education	39	Developments at Geneva Conference
	<b>Marketing:</b>		Whaling
30	Edible Fishery Products Marketing Prospects, Spring-Early Summer 1960	40	Antarctic Sperm Whale Oil Production Lower for 1959/60 Season
	<b>North Atlantic Fishery Investigations:</b>	41	Antarctic Whale Oil Production Lower for 1959/60 Season
30	Spawning Habits of Haddock Studied on Georges and Browns Banks (M/V Delaware Cruise 60-4)		<b>British Honduras:</b>
	<b>North Pacific Exploratory Fishery Program:</b>	41	Fishery Products Exports, 1958-59
31	Modified Otter-Trawl Experiments Continued (M/V John N. Cobb Cruise 45)		<b>Canada:</b>
		42	Biologists Survey Arctic Fishery Resources
			<b>Costa Rica:</b>
		42	Fisheries Trends, April 1960
		43	Shrimp Industry Trends, 1959
			<b>Cuba:</b>
		43	Fisheries Trends, March 1960

Contents Continued Page 89.

# COMMERCIAL FISHERIES REVIEW

June 1960

Washington 25, D.C.

Vol. 22, No. 6

## EXPLORATORY FISHING IN LAKE ERIE, SEPTEMBER 1958-NOVEMBER 1959

By Reidar F. Sand\* and William G. Gordon\*\*

### SUMMARY

Exploratory fishing to determine the commercial availability of smelt (*Osmerus mordax*) in the United States waters of Lake Erie, was conducted by the U. S. Bureau of Commercial Fisheries during the fall months of 1958 and from April to November 1959. In the 1958 investigation, lampara-seine operations were carried out from small Lake Erie trap net-type vessels. The 1959 investigation was expanded to include the systematic trawl coverage of Lake Erie, and the M/V Active, a large trap net-type vessel was chartered and successfully converted for the trawling work. Excellent catches of smelt were made with standard 50-foot cotton two-seam balloon trawls. Experimental efforts with a midwater trawl were not productive.



Fig. 1 - Canadian pound-net vessel. The crew is preparing to lift the smelt net.

Smelt was the most abundant species taken during the exploratory operations, and this species comprised more than 97 percent of the total catches recorded. Many

\*Chief, Great Lakes Fishery Exploration  
and Gear Research Station, Ann Arbor, Mich.

\*\*Chief, Great Lakes Fishery Exploration  
and Gear Research Station, Sandusky, Ohio

} Division of Industrial Research, U. S. Bureau of Commercial  
Fisheries.

trawl drags in the summer and early fall of 1959 resulted in catches of more than 500 pounds per half-hour drag. The best trawl drag produced a catch of 5,000 pounds of smelt in one hour. Large and medium size smelt (10 to 20 per pound) dominated most trawl catches and comprised over 80 percent (by weight) of all catches made by the Active.

Localities where otter-trawl drags yielded promising smelt catches included the west-central portion of Lake Erie in the late spring and early summer, the central portion in mid-summer, and the east-central portion of the lake in late summer and early fall.

Little fishing time was lost during spring and summer explorations. The late fall work, however, was hampered by strong winds, heavy seas, and hazardous vessel ice formations which prevented complete coverage of seasonal smelt distribution in 1959.

#### BACKGROUND

The American smelt (Osmerus mordax) was first successfully planted in the upper Great Lakes in about 1912 (Van Oosten 1936). It was not until the early 1940's, however, that any commercial abundance was noted in Lake Erie. About 1941 the Canadian fishing industry recognized the commercial possibilities of the resource and commenced production during the spring spawning run. Pound nets were used at first and later trap nets (fig. 1). By 1957, studies made by the U. S. Bureau of Commercial Fisheries, using the Bureau-owned vessels Cisco and Musky, showed that smelt had become one of the most abundant species in Lake Erie.

The decline in abundance of more valuable commercial species forced a general interest in smelt and other nonutilized species; but lack of fishing, except in restricted areas, left broad gaps in the knowledge of seasonal distribution. This interest in smelt, arising from the economic distress on the part of the industry, prompted the Ohio Commercial Fishermen's Association and the State of Ohio to request the assistance of the Bureau in developing efficient methods of exploitation of the smelt resource.

#### OPERATIONAL PROGRAM AND CRUISE ITINERARY

A search of the available literature failed to show any published information on the seasonal distribution of smelt in Lake Erie other than observations made on spawning concentrations in Canadian waters of Lake Ontario. With the exception of limited trawling work, confined to biological sampling, in the Central and Eastern Basins of Lake Erie by the Bureau vessel Cisco in 1957 and 1958, and by U.S. state and Canadian provincial agencies, no inventory work had been carried out.

Because of the lack of information on the distribution of smelt or other fish stocks in those areas, a program was planned to give primary emphasis to the systematic exploratory coverage of United States waters of the lake on a seasonal basis and to determining the commercial availability of smelt to both seines and standard-type otter trawls. Provisions were made in scheduled cruises for demonstrations of seine and trawling gear to commercial fishermen, research personnel from state agencies, and representatives from conservation groups.

In September 1958, preliminary explorations got under way from Vermilion, Ohio, with the trap-net vessel Pat. A lampara seine was used during the surface-scouting and echo-sounding operations which continued through November. From April through November of 1959, the surface-scouting and echo-sounding operations were continued and the operational program was expanded to include systematic trawl coverage of Lake Erie between Monroe, Mich., and Buffalo, N. Y. (table 1).



Table 1 - Cruises Completed During Bureau of Commercial Fisheries 1958-59  
Lake Erie Fisheries Exploration

Cruise No.	Vessel	Dates	Area of Coverage	Depth Range (Fathoms)
1	Pat	10/2-10/14/58	Huron to Lorain, Ohio	2-12
2	Thelma	10/18-11/28/58	Vermilion, Ohio, to Erie, Pa.	2-13
1	Active	4/21-5/12/59	Monroe, Mich., to Sandusky, Ohio	2-6
2	Active	6/2-6/24/59	Sandusky to Cleveland, Ohio	2-13
3	Active	7/6-7/23/59	Cleveland to Conneaut, Ohio	2-13
4	Active	8/3-8/17/59	Conneaut, Ohio, to Buffalo, N. Y.	5-25
5	Active	8/27-9/6/59	Conneaut, Ohio, to Dunkirk, N. Y.	5-25
6	Active	9/22-10/8/59	Fairport, Ohio, to Erie, Pa.	5-13
7	Active	10/20-10/27/59	Fairport to Vermilion, Ohio	2-13
8	Active	11/9-11/23/59	Vermilion to Port Clinton, Ohio	2-12

## VESSELS USED

Three vessels were used in portions of the 1958-59 lampara-seine and trawl operations: Pat; Thelma H.; and Active. All three vessels were actively engaged in the commercial trap-net fishery when obtained.



Fig. 2 - A typical Great Lakes trap-net vessel similar to the vessels Pat and Thelma H., used in lampara-seine exploratory operations.

M/V "PAT": The Pat was obtained by cooperative agreement with the owner and used in the first phases of lampara-seine work (September-mid-October 1958). This vessel, a conventional trap-net boat of steel construction, is 36 feet in length with an 11-foot beam (fig. 2). It is powered by a 90-hp. gasoline engine and was originally equipped with a standard net reel and single winch for use in the trap-net fishery. Few changes were required for the seine operations. The existing trap-net reel was used for hauling both seine wings simultaneously, but it proved to be too high for easy handling of the lampara and was modified by construction of shorter stanchions. In addition, a recording depth-sounder with a depth range of 150 feet was installed.

M/V "THELMA H.": The Thelma H., also of typical trap-net design, was chartered to continue operations through November 1958. The vessel, 38-feet long with

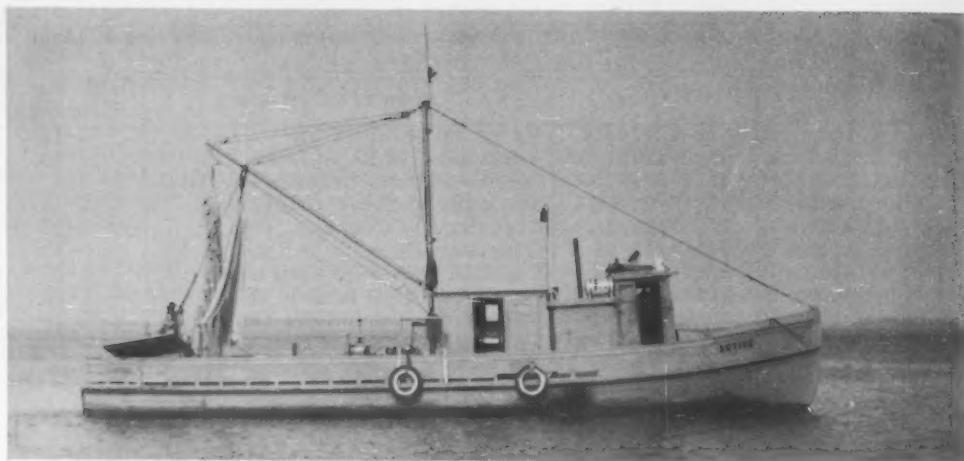


Fig. 3 - M/V Active, chartered 50-foot trap-net vessel converted for exploratory fishing in 1959.



Fig. 4 - Winch engine and deck-gear arrangement aboard the M/V Active.

a beam of 13.5 feet, is powered by a 225-hp. gasoline engine. Conventional gear for trap-net operations--consisting of the trap-net reel and single deck winch--proved adequate for handling the lampara seine. The depth-sounding equipment from the Pat was installed aboard the vessel for exploratory operations.

M/V "ACTIVE": Since the smaller trap-net vessels were not ideally suited to the exploratory operations, a larger vessel, the Diesel-powered Active (fig. 3) was obtained by charter and operated from April to November 1959. This vessel is of wood construction, 50-feet in length with a 14.5-foot beam and a draft of 4.5 feet. The main engine is rated at 95 hp. (continuous duty).

The vessel underwent considerable modification for use in seining and trawling. Limited accommodations were added for three men aft of the existing pilothouse. A two-drum trawl winch, which held 80 fathoms of 3/8-inch cable on each drum, was mounted aft of the quarters (fig. 4). A modified net reel was mounted amidships on the

starboard rail for hauling the lampara seine. Power for both winch and reel was supplied by a separate 20-hp. air-cooled engine. Pipe stern davits and outriggers from winch to bulwark were added and were equipped with 9- by 4-inch standard

towing blocks (fig. 5). A steel mast and boom and all conventional deck gear and rigging necessary for the fishing operations were installed. The Active was also equipped with radiotelephone, a shallow-water depth-recorder, and a second recorder with a range sufficient to permit sounding the deeper waters of Lake Erie (210 feet). A 2-kw., 115 volt, a. c. generator was also installed.

#### GEAR AND METHODS

**LAMPARA SEINING:** The lampara seine used during the 1958 operations was a Pacific coast-type bait seine, 60 fathoms long by 7 fathoms deep. The wings were constructed of 9-thread, 4-inch-mesh cotton twine and were 200 meshes deep. The bunt was made of 12-thread,  $1\frac{1}{2}$ -inch mesh cotton attached to a  $\frac{1}{2}$ -inch mesh woven nylon bag. The seine was modified, during the 1959 investigation, by the addition of 40 fathoms of twine to each wing and removal of 50 meshes in depth to permit use in shallower waters.

A standard steel trap-net reel, about 12 feet long, was used aboard the smaller trap-net vessels. For use aboard the Active, the reel length was shortened to 8 feet. The lampara was set over the stern with a skiff or drag-and-buoy attached to one wing, in the usual circular setting pattern, and closed with the vessel downwind. With the trap-net reel described, it was possible to "dry-up" the lampara in 12 to 15 minutes. Both wings were hauled simultaneously and stacked on deck. Using this method, it was possible to set the lampara again without restacking one wing.

**TRAWLING:** Gulf of Mexico-type two-seam balloon trawls, 50-feet along the headrope and of  $2\frac{1}{2}$ -inch, 18-thread cotton mesh in wings and body, constituted the principal trawl gear used during the 1959 operations. Cod end mesh sizes varied from 1 to  $2\frac{1}{2}$  inches. Some trawls were modified by the addition of a 1-inch mesh second intermediate. Bracket doors used with the nets measured  $2\frac{1}{2}$  by 6 feet and weighed about 180 pounds each. Dandyline gear (similar to that used in Pacific Coast otter trawling), with 60-foot cable extensions from doors to the trawl, was used on all exploratory drags. Only minor variations were made to permit fishing for smelt with the trawl running slightly above the bottom. The gear was set and hauled directly over the stern of the vessel. The cod end was hauled to the stern with a lazyline as the net was retrieved, and the catch was hoisted aboard.

With the exception of its action on certain soft-bottom areas, this gear performed well in Lake Erie at depths from 2 to 25 fathoms. The ratio of towing warp to depth (scope) varied from 5:1 in shallow water to 3:1 in deep water. Dragging speeds averaged approximately 2.5 miles an hour, and drags were normally either 30 minutes or 1 hour long. Most trawl drags were made downwind or with the sea, owing to a lack of reserve horsepower on the Active.

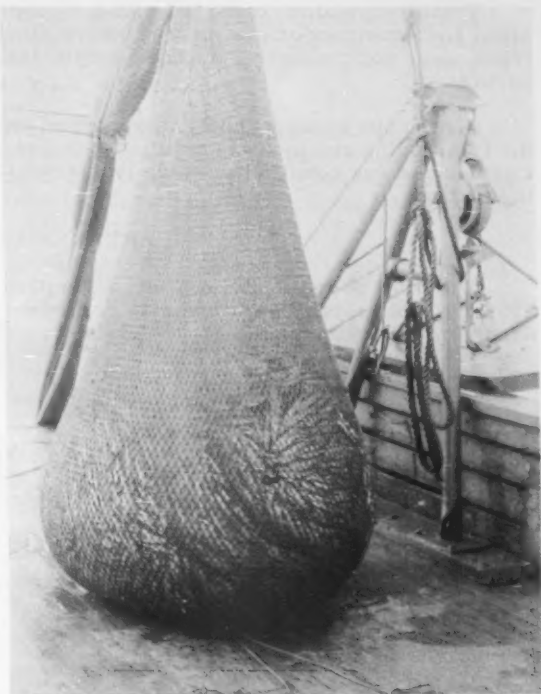


Fig. 5 - On the right, stern davit and towing block used aboard the M/V Active.

Trials were also conducted with a 40-foot-square nylon midwater trawl. Mesh sizes and construction of this trawl were discussed previously (Sand 1959). The trials were not productive owing to scattering of fish at midwater levels during the period.

Continuous echo-sounding was carried on during cruising and fishing operations for fish finding and locating bottom obstacles. Observations were recorded on weather and sea conditions, water temperatures, and bottom conditions at all fishing stations.

#### AREA COVERED

A total of 86 trawl stations and 9 lampara stations were established during the 1958-59 exploratory operations. Over three-fourths of these stations were east of Sandusky, Ohio (fig. 6).

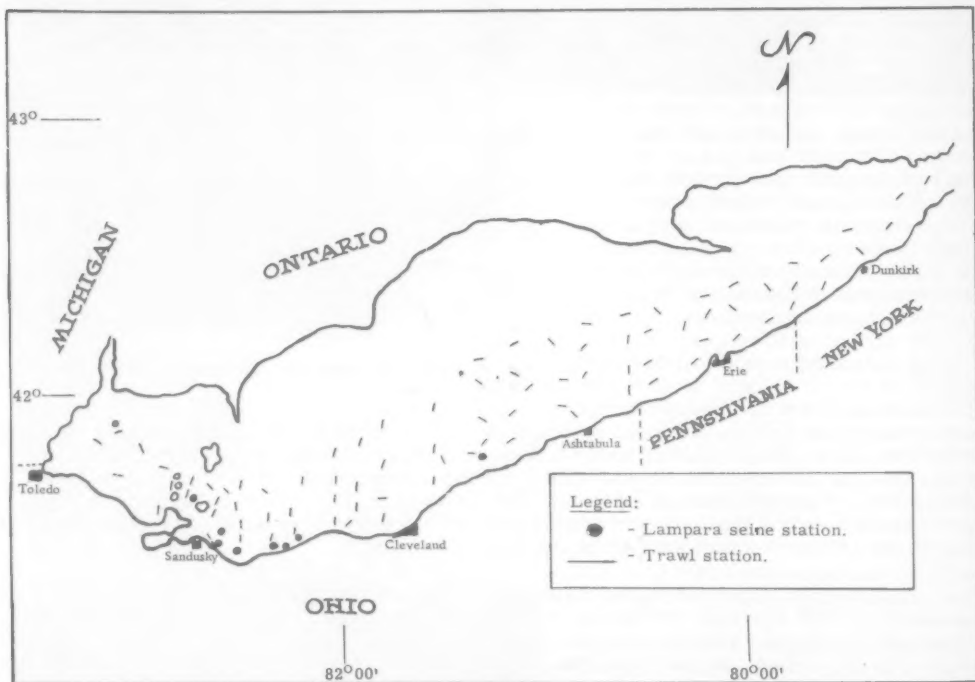


Fig. 6 - Locations of trawl and seine stations made by the vessels Pat, Thelma H., and Active--1958-59.

The southwest-northeast axis of the lake amplifies the effects of strong winds in these directions. During the spring and fall seasons, winds of moderate-to-fresh velocities frequently cause dangerous seas in short periods of time. Good harbors, however, are usually within easy distance of fishing vessels working Lake Erie. Seiches (oscillations of water level of lake or landlocked sea) often produce currents in excess of 2 miles an hour at both the eastern and western ends of the lake. Neither these nor the observed variations in force and direction of winds, which caused surface currents for short periods, seriously hampered fishing operations.

The bottom configuration of Lake Erie between Monroe, Mich., and Buffalo, N. Y., shows great variation in form and composition. In Ohio waters, studies by

soil-erosion engineers have shown that over two-thirds of the bottom surface is mud. Hard clay, sand, mixtures of sand and mud, and outcroppings of rock make up the remainder. The bottom materials of the Pennsylvania and New York waters of the lake are also clay, sand, or mud and rock outcroppings.

For study, the United States waters of Lake Erie were subdivided into three zones on the basis of differences in depth and bottom configuration. These three zones are: The West Basin from Toledo to Sandusky, Ohio; the Central Basin from Sandusky, Ohio, eastward to Erie, Pa., and the East Basin from Erie, Pa., to Buffalo, N. Y.

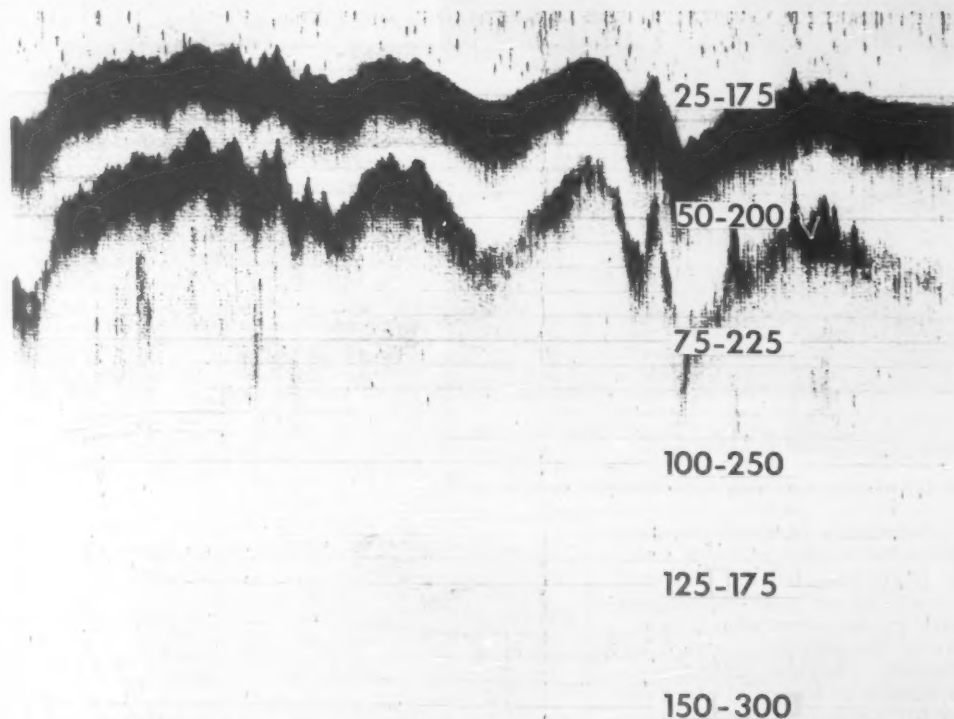


Fig. 7 - Depth recording made aboard the M/V *Active* in the vicinity of Port Clinton, Ohio. The typical irregular bottom of much of the inshore area of western Lake Erie is clearly shown.

**WEST BASIN:** This zone contains the island area extending westward from Sandusky to Toledo, Ohio. With a few exceptions, this zone is not well-suited to commercial-scale otter trawling. Limestone and dolomite bedrock crop out on the lake bottom in several areas. The largest areas of exposed rock occur near Marblehead, Ohio, and in all the interisland passages. Reefs composed of boulders and gravel are found off Locust Point and toward Port Clinton, Ohio (fig. 7). In addition to the generally poor trawling grounds there, the former pound-net fishery has left the bottom in some areas widely strewn with submerged net stakes. The intensive commercial trap-net fishery in this zone during the spring and fall seasons also further hinders trawling efforts. All drags in this zone, therefore, were of short duration. Western Lake Erie is also characterized by the almost total absence of thermal stratification. Normally, water temperatures in this zone are uniform over large



areas. Studies by Wright (1955) and work carried out by the Bureau's biological re-



Fig. 8 - Depth recording of bottom northwest of Erie, Pa. Depth in 5-foot increments.

search vessel Cisco indicate that thermal stratification may be regarded as a minor factor in the aquatic environment of the West Basin.

**CENTRAL BASIN:** The Central Basin received the greatest amount of trawl coverage. Of the total of 253 trawl drags completed, 187 were made in this zone. With the exception of a narrow band of rock and shale deposit along the shoreline from Huron, Ohio, to Walnut Creek, Pa., the bottom is composed of mud, sand, and clay and is free from trawling hazards. Two obstacles to trawling were found in the deeper waters of the Central Basin. One bar, north of Vermilion, Ohio, near the international boundary, is partly rock strewn. Minor damage to trawls occurred there. A second bar, northwest of Erie, Pa., is untrawlable with conventional trawl gear because of sharp rises and depressions (fig. 8). Debris and trash, including submerged trees have accumulated on the western approach to this bar. Exten-

sive trawl damage was experienced in this area.

Knowledge of water temperatures in the deeper parts of Lake Erie is limited, but the fact that summer and early fall bottom temperatures are somewhat below those of the surface has been established. Thermal stratification occurs in central Lake Erie, often for prolonged periods, from late spring to early fall (fig. 9). Studies by the Bureau, the Ohio Division of Wildlife, and the Ontario Department of Lands and Forest indicate that oxygen depletions in the bottom waters occur prior to the close of thermal stratification. These oxygen depletions are attributed to natural causes and usually develop after prolonged periods of calm warm weather. The apparent effect on fish abundance and distribution is marked. Most trawl drags in the area during the period of oxygen depletion were water hauls.

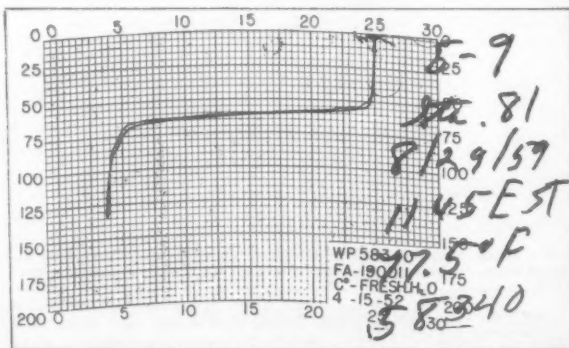


Fig. 9 - Bathythermograph tracing recorded in the East Basin of Lake Erie. Depth recorded in feet, temperature in degrees Centigrade.

**EAST BASIN:** The East Basin includes the deepest waters of the lake. The in-shore waters, less than 8 fathoms in depth, are strewn with shale rock known locally as "shelf or slab rock." The width of this outcropping varies from a few hundred feet to several miles. The slopes are generally steep and these prevented

normal trawling operations. Beyond 8 fathoms, the slope becomes more gradual, and the bottom is composed of sand, clay, and mud providing good trawling grounds.

A well-defined thermal stratification (fig. 9) existed over much of the East Basin during cruises 4 through 6 of the *Active* (August 3-October 8, 1959). Vertical temperature differences, between surface and bottom, of 37° F. (40.0-77.0° F.) were recorded during cruises. Data collected by Parmenter (1929) and more recently by the M/V *Cisco* in this basin, indicate that wide temperature differences between surface and bottom water may occur annually.



Fig. 10 - Chart of western Lake Erie depicting areas unsuitable for trawling and the spring distribution of smelt. Length of oblique lines is correlated with the area over which smelt were taken or observed.

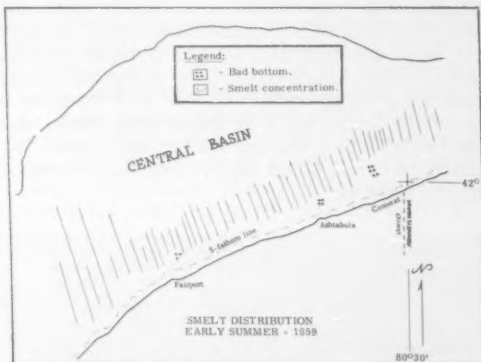


Fig. 11 - Chart of the fishing area showing early summer smelt distribution. Oblique lines designate areas where smelt were caught.

Exploratory operations were conducted along the entire south shore of Lake Erie and northward to the international boundary at depths greater than two fathoms. During the explorations, 253 trawl drags were made and 14 lampara-seine sets completed. Positions of seine sets and trawl stations are shown diagrammatically in figure 6. Areas of seasonal smelt concentration, and locations where snags, torn gear, or bad bottom were encountered, have been plotted on charts for reference (figs. 10, 11, and 12).

#### FISHING RESULTS

**LAMPARA-SEINE FISHING:** The exploratory operations by the vessels *Pat*, *Thelma H.*, and *Active* were not successful in producing commercial quantities of smelt with the lampara seine. Surface scouting, aerial surveys with light planes, and echo-sounding operations failed to reveal any large concentrations of smelt in surface waters.

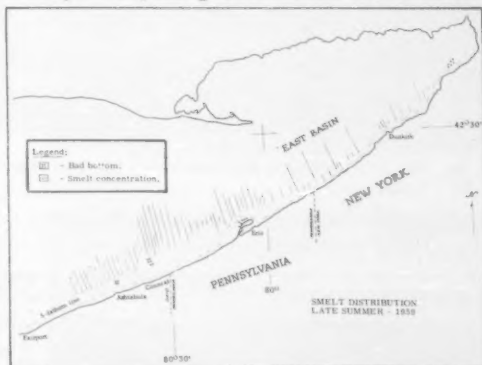


Fig. 12 - Chart of the eastern half of Lake Erie showing areas where snags or bad bottom were encountered and areas where smelt concentrations were observed.

During the periods October 15-November 24, 1958, and April 21-November 23, 1959, a total of 14 seine sets produced only trace amounts of smelt, white bass (*Lepibema chrysops*), gizzard shad (*Dorosoma cepedianum*), alewife (*Pomolobus pseudo-harengus*), and emerald shiners a subspecies of *Notropis atherinoides*. As shown in figure 6, most of the seine trials were conducted west of Cleveland, Ohio, and close to shore. Prior to the start of exploratory work in 1958, observations by commercial fishermen and others indicated the possibility that smelt appear in

surface schools in inshore waters and near the Lake Erie islands. Hundreds of surface schools of fish were sighted during the 1958-59 work. Samples from some of these were identified as emerald shiners. A total of three lampara-seine sets made in 1959 on other schools resulted in small catches of white bass and minnows. To date, smelt have not been found to be available to capture in surface-seine operations in Lake Erie.

**OTTER-TRAWL FISHING, WEST BASIN:** Exploratory trawling operations in the shallow West Basin between Toledo and Sandusky, Ohio, were handicapped by boulder-strewn areas, rock outcrops, and the presence of numerous commercial trap-fishing nets. Individual trawl drags made near the islands showed some promise with catches of 10 to 50 pounds of yellow perch (*Perca flavescens*), catfish (*Ameiuridae*), carp (*Cyprinus carpio*), and sheepshead (*Aplodinotus grunniens*) per half-hour drag within the 4- to 5-fathom depth range. The small quantities of smelt taken in drags completed in this zone, however, gave little evidence of commercial concentrations during either the spring or fall months. Previous research has established that adult smelt are not abundant in this zone during the summer warm-water period.



Fig. 13 - 5,000 pounds of smelt taken in a one-hour drag by the M/V Active.

and early summer, catches of 20 to 600 pounds per hour were made between Sandusky and Ashtabula, Ohio. During the late summer, however, catches averaging

**CENTRAL BASIN:** From June 2 to November 23, 1959, 7 cruises were conducted in part in the Central Basin with 50-foot 2-seam semiballoon industrial-fish trawls at depths of 5 to 13 fathoms. With few exceptions, drags completed in summer months resulted in from 80 to 5,000 pounds of commercially-salable smelt per hour (fig. 13). Trawl catches in this zone during the fall months were lighter and failed to produce evidence of large smelt concentrations (table 2).

A summary of the trawling operations in the Central Basin shows a seasonal shifting of smelt concentrations and considerable variation in availability. In late spring

Table 2 - Fishing Log of M/V Active Otter Trawl Tows, 1959

Cruise No.	Dates	Geographic Area	Gear <sup>1/</sup>	No. of Tows	Time Towed (Avg.)	Fishing Depth (Range in Fathoms)	Smelt Catch (Lbs.)	Other Fish Catch (Lbs.)
1	4/21-5/13	West Basin	50' Trawl	14	00.25	2-6	85	359
2	6/2 -6/24	Central Basin	50' Trawl	45	00.30	2-13	4,372	372
3	7/6 -7/23	Central Basin	50' Trawl	66	00.45	6-13	5,279	224
4	8/3 -8/17	Central & East Basin	50' Trawl	31	00.34	5-25	2,082	170
5	8/27-9/6	Central & East Basin	50' Trawl	29	00.34	5-25	4,325	89
6	9/22-10/8	Central Basin	50' Trawl	39	01.00	9-13	50,572	401
7	10/20-10/27	Central Basin	50' Trawl	14	00.29	5-13	95	94
8	11/9 -11/23	Central & West Basin	50' Trawl	16	00.33	2-12	53	195

<sup>1/</sup> Standard 50-foot two-seam Gulf of Mexico trash fish trawl.

over 1,000 pounds per hour were made over much of the area extending from Ashtabula eastward to Erie, Pa., at depths of 10 to 13 fathoms.

Based on these successful fishing efforts, commercial-scale production trials were made on two occasions. In July, 7 days of fishing produced a total of 3,340 pounds of smelt (12 to 18 count). The second attempt, in late September, resulted in the capture of over 40,000 pounds of smelt (10 to 20 count) in 6 days of trawling (fig. 14). No severe gear damage occurred during either of the commercial scale demonstrations.



Fig. 14 - A good catch of marketable-size smelt aboard the M/V Active.

warm water, with the smaller individuals

**EAST BASIN:** The M/V Active also carried out limited exploratory trawling coverage of the East Basin during cruises 4 and 5 (August 3-September 6, 1959). The coverage accomplished, however, is not representative of the seasonal distribution of smelt or other fish stocks in this portion of the Lake.

Smelt catches here were light during the period August 5 to 11, 1959. Of the 14 trawl drags completed, 2 were water hauls; the remainder produced only 125 pounds of small smelt (20 to 40 count). Catch rates varied from 2 to 50 pounds per half-hour drag. On one occasion, the net and doors bogged down in the extremely soft bottom and only a portion of the catch was retrieved.

Commercially-salable smelt were taken in 12 drags in the East Basin in amounts of 20 to 500 pounds per half-hour drag August 28 to September 3. The best catch results were made on the slopes outside Dunkirk, N. Y., at depths of 10 to 12 fathoms, and off the Pennsylvania-New York border at depths of 15 fathoms. Catches up to 150 pounds per half hour were made along the 10-fathom contour. Deeper water catches were much lighter.

Several aspects of the smelt distribution pattern in the East Basin were notable. During the first cruise in this zone, few large smelt were taken, and the catch rate fluctuated widely with little regard to a particular depth range. Catches made during the second trip were more uniform, favored the larger individuals, and

At the start of each cruise, systematic echo-sounding transects were made to locate the best fishing areas and depths. Results indicated an intermittent distribution of smelt in the zone. Daily fluctuations in the catch rate were not fully understood, but diurnal vertical movement was determined to be one contributing factor (fig. 15).

Sample counts of smelt from the Central Basin ranged from 8 to 40 per pound. Data collected on the size distribution show that over 80 percent of the catches consisted of 10- to 20-count smelt. The difference in sizes was more marked, however, in the shallower depth range (shallower than 5-6 fathoms) in generally inhabiting the shallow waters.

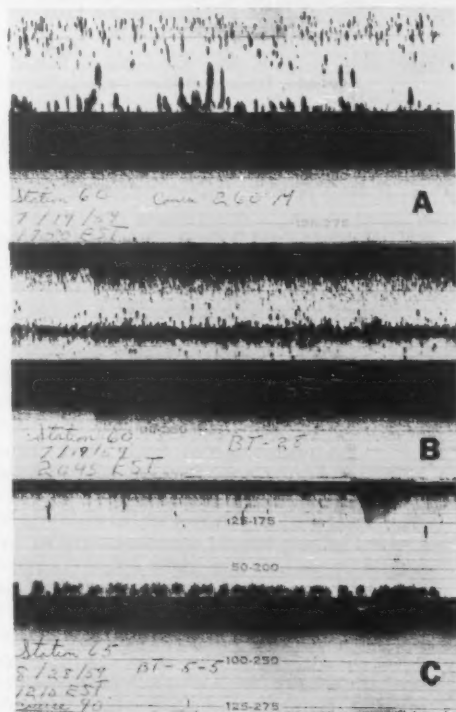


Fig. 15 - Depth recording made aboard the M/V Active off northeastern Ohio: (A) Typical tracings of fish concentrations made during daylight hours. (B) Tracings made during evening operations. (C) Tracings made 40 days later in same general area as A and B.

the smelt appeared concentrated within a narrower depth range. These differences may be attributed to a possible recruitment of smelt from the central basin following the reported oxygen depletion which existed there during late summer.

### CONCLUSION

Results of the explorations from the 1958-59 work in Lake Erie indicate that the abundant smelt can be taken profitably on a commercial scale with trawling gear. There is evidence that the seasonal availability and distribution is closely related to lake water temperatures within a range of 41° F. to 68° F., and with the colder mid-50-degree range of temperatures preferred. The thermal stratification of water and vertical migration of the smelt will affect the availability to the fishing fleet. Day-light trawling for smelt appears much more promising than night fishing. Evidence to date suggests that when commercial-scale concentrations of smelt are found, they tend to be uniform in composition with few other species present.

### SELECTED REFERENCES

#### OHIO, DEPARTMENT OF NATURAL RESOURCES

1957. Bottom Deposits of Western Lake Erie. Technical Report No. 4, Department of Natural Resources, Division of Shore Erosion, State of Ohio, p. 4.

1959. Shore Erosion in Ohio. Department of Natural Resources, Division of Shore Erosion, State of Ohio, p. 39.

#### PARMENTER, RICHARD

1929. Hydrography of Lake Erie, Bulletin Buffalo Society of Natural Sciences, vol. 14, no. 3, pp. 25-50.

#### SAND, R. F.

1959. Midwater-Trawl Design by Underwater Obser-

ventions. Modern Fishing Gear of the World, Fishing News (Books), Ltd., pp. 209-210.

#### U. S. COAST AND GEODETIC SURVEY

1959. Great Lakes Pilot, U. S. Lake Survey (Coast and Geodetic), Lake Erie, pp. 307-362.

#### VAN COSTEN, JOHN

1937. The Dispersal of Smelt, Osmorus mordax (Mitchell), in the Great Lakes Region. Transactions American Fisheries Society, vol. 66 (1936), pp. 160-171.

#### WRIGHT, STILLMAN

1955. Limnological Survey of Western Lake Erie. U. S. Fish and Wildlife Service, Special Scientific Report--Fisheries No. 139, 341 pp.

### CHINOOK SALMON PREFER PLUNGING FLOW

The passage of individual chinook salmon was studied by the U. S. Bureau of Commercial Fisheries in a non-orifice pool-type "endless" fishway with a slope of 1:16 whereby fish were subjected to plunging and streaming flows on alternate circuits of the 16-pool unit. The effects of the two flows on rate of ascent were determined by comparing time required for each circuit of the fishway. Also on each circuit, individuals were observed as they passed through a specially constructed viewing pool.

Based on these data, a plunging flow appears to be the desired condition for all fish even though the majority performed equally well in either plunging or streaming flows.

During the tests, a series of view-pool observations plotted the movements of individual fish in terms of the time spent in each of four quadrants of the pool. When flows were plunging, the lower downstream quadrant was the dominant area utilized, while in streaming flows, the lower upstream quadrant was the favored area. During rest periods fish always aligned themselves to head into the current.





### **FISH FLOUR IS PRIMARILY A PROTEIN CONCENTRATE-- NOT A SUBSTITUTE FOR GRAIN FLOUR**

"Can fish flour be used as a high protein flour in baking?" "Could fish flour be used as a replacement for flour in thickening gravies and soups?" "Would fish flour be more nourishing than whole wheat flours?" "Just how can fish flour be used in cooking?" "Is fish flour really a flour?" These kinds of questions are constantly being asked of the research staff of the U. S. Bureau of Commercial Fisheries' Technological Laboratory in College Park, Md., where research is currently being conducted on the nutritive value of fish flour.

First, let us consider the food that is commonly termed flour, or all-purpose flour, and its general functions in cooking. Flour is a milled product of wheat (although other flours may be produced from other cereal grains such as rice, barley, rye, or corn). All-purpose wheat flour is composed of 76.1 percent carbohydrate, primarily in the form of starch; 10.5 percent vegetable protein; 0.4 percent ash; 1.0 percent fat; and 12.0 percent water<sup>1/</sup>. The hydrative, adhesive, and gel-forming properties of the starch of flour account for the primary functions of flour in food preparation. Through these properties (1) soups and sauces may be thickened, (2) molded gels such as puddings may be formed, (3) the framework of such baked products as muffins, breads, biscuits, and cakes may be formed, and (4) other foods such as flaked fish may be cemented together to form croquettes, etc. The formation of the frame work of the more firm baked products, such as bread, is enhanced by the elastic and extensible properties of the vegetable protein glutenin, which comprises about 60 percent of the total protein of flour.

Now let us consider the properties of fish flour and how these might function in food preparation. In general, fish flour is a product prepared by defatting, drying, and milling by a variety of methods a whole fish, fish fillet, or fishery byproduct. It is white or tan in appearance, very powdery in consistency, usually odorless, and is either flavorless or possesses a nutty flavor. A mild odor and flavor of fish is obtained if small quantities of residual fat are retained in processing--a desirable characteristic for certain purposes. Fish flour is composed of 70-95 percent animal protein; 2-25 percent ash, mostly calcium and phosphorous; 3-12 percent water; and negligible quantities of carbohydrate and fat. The specific physical characteristics and chemical composition of any particular fish flour are a function of the raw material and the method of processing utilized. But, satisfactorily prepared, fish flour should contain all the quality protein, and important dietary minerals and vitamins contained in the fresh, raw fish. Fish flour would primarily be used as an animal protein and/or calcium and phosphorous supplement of processed foods to improve their nutritive value. Such processed foods might include breads, cookies, crackers, breakfast foods, cake and pancake mixes, macaroni products, baby foods, dietetic foods, and perhaps even flour itself--all-purpose flour, that is.

<sup>1/</sup> Percentages obtained from Composition of Foods, USDA Agriculture Handbook No. 8, Miscellaneous Publication 572, June 1950.

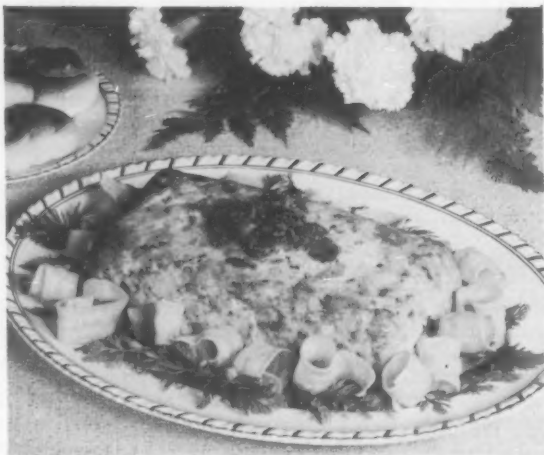
Fish flour might also be used as the meat base in dehydrated or prepared soups, sauces, and gravies.

So, fish flour does not contain any of the factors in common flour that give this latter product its specific properties in food preparation. Fish flour, instead, is primarily a potentially valuable animal protein concentrate with unique nutritional properties for use in food preparation. The term "flour" as applied to this fish protein is perhaps unfortunate and misleading, since fish flour is not really a flour at all.



### HALIBUT

Halibut are principally harvested in the North Pacific waters off the coasts of Washington, British Columbia, and Alaska. Smaller amounts of halibut are taken off the North Atlantic coast.



Halibut is the largest of the flatfishes ranging in size commercially from 5 to 80 pounds. This large, firm, and flavorful fish is one of the most highly prized of all white-meated fish and may be prepared by any of the basic cooking methods such as frying, baking, broiling, boiling, and steaming.

Halibut is available the year around in all parts of the United States, mainly as frozen steaks. Steaks are the cross-section slices of dressed fish containing a cross section of the backbone. Chunks and fillets are other forms in which halibut may be purchased.

As a different way of serving halibut, the home economists of the U. S. Bureau of Commercial Fisheries recommend "Baked Halibut Loaf."

#### BAKED HALIBUT LOAF

1 pound halibut steaks or fillets	1 tablespoon chopped parsley
1 quart boiling water	$\frac{1}{2}$ cup coffee cream
1 tablespoon salt	1 teaspoon grated onion
1 chicken bouillon cube	1 teaspoon salt
$\frac{3}{4}$ cup boiling water	Dash pepper
$1\frac{1}{2}$ cups soft bread cubes	2 teaspoons lemon juice
$\frac{1}{2}$ cup chopped celery	2 eggs, beaten

Place steaks in boiling salted water. Cover and return to the boiling point; simmer for 10 minutes or until fish flakes easily when tested with fork. Drain. Remove skin and bones. Flake. Dissolve bouillon cube in boiling water. Combine all ingredients. Place in a well-greased loaf pan, 9 x 5 x 3 inches. Bake in a moderate oven, 350° F., for 1 hour or until loaf is firm in the center. Serves 6.

# TRENDS AND DEVELOPMENTS

## Fishing Vessel and Gear Developments

### EQUIPMENT NOTE NO. 4-- A METHOD OF MAKING ELECTRICAL TRAWL CABLE TERMINATIONS AND CONNECTIONS:

The use of a depth-sensing unit, electrical trawl cable, and a shipboard indicator to telemeter measurements of the operational depth of midwater trawls has been described previously (McNeely 1958, 1959). Correspondence subsequently received at the U. S. Bureau of Commercial Fisheries Seattle Exploratory Fishing and Gear Research Base indicates a growing interest by marine scientists in the use of

electrical cables which can tow fishing gear and sampling devices and transmit measurements of (1) performance characteristics, and (2) physical properties of the water masses through which the devices pass. Detailed descriptions of methods of making cable terminations and connections have been requested frequently.

This was prepared to answer these requests. It describes and illustrates workshop techniques and materials tested and found reasonably reliable as a result of use aboard the Bureau's exploratory fishing and gear research vessel John N. Cobb. The general procedure and materials shown can be used to make similar terminations and connections with cable types and marine instruments other than those indicated.

### CABLE TERMINATION

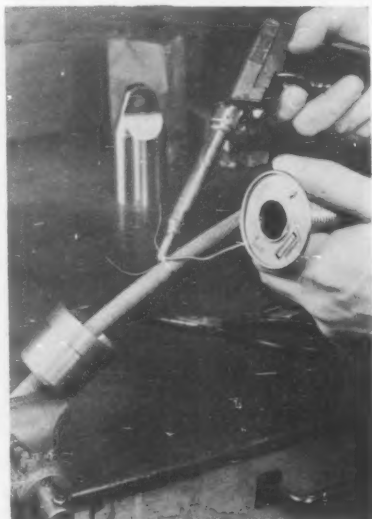


Fig. 1 - Operation 1. Slip the socket section of the sensing-unit housing onto the cable to a position 10 to 12 inches from the cut end. Wind several turns of small-diameter tinned seizing wire around the cable to form a band approximately one-eighth inch wide, 7 inches from the same end. Twist the ends together, solder, and clip off excess wire at the twist. DO NOT ATTEMPT TO SOLDER THE BAND TO THE CABLE.

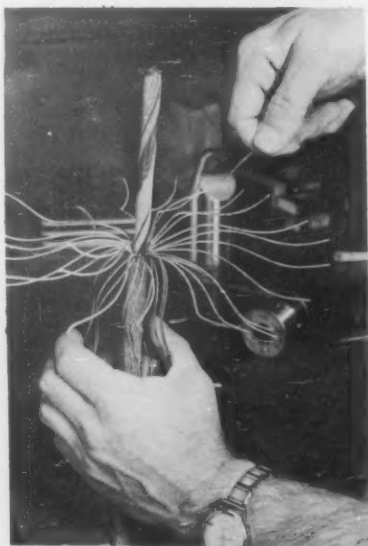


Fig. 2 - Operation 2. Clamp the cable upright in a vise and unwind the outer layer of steel strands--one by one. Bend the strands at the seizing band until each is perpendicular to the cable. Unwind the inner layer of steel strands--one by one--and bend each of these strands sufficiently to pass down between the outer strands.



Fig. 3 - Operation 3. Clip off the strands of both layers approximately seven-eighths of an inch from the seizing band. Using a pair of "needle-nose" pliers, bend a right-angle hook on each strand one-quarter inch from the end.



Fig. 5 - Operation 5. Wind successive layers of  $\frac{1}{2}$ -inch fiberglass tape around the conductor section to a thickness of about one-eighth inch. Butt the edge of the tape firmly against the sealing compound. Build a second section of successive layers of tape to a thickness of one-sixteenth inch directly above the first. Wind any extra tape around the remaining unprotected conductor section and secure the end.



Fig. 4 - Operation 4. Roll out a small thread of sealing compound and tamp it in around the conductor section of the cable.



Fig. 6 - Operation 6. Move the socket on the cable until it rests firmly against the bent strands. Pack sealing compound around the cable at the bottom of the socket by tamping it with fingers or other blunt object. Figure 9 shows the sealing compound around the cable. Clamp the cable upright in a vise at a position which will allow the socket to be moved a short distance away from the bent ends of the cable strands. The bent ends should not protrude above the threaded edge of the socket. Wind several layers of glass tape around the threaded edge of the socket, allowing about three-sixteenths of an inch of the tape to form a rim above the edge of the socket.



Fig. 7 - Operation 7. Heat a sufficient amount of babbitt in a ladle until it becomes molten and will blacken a splinter of dry wood. Pour the molten babbitt into the socket in one continuous stream until it rises one-sixteenth to one-eighth of an inch above the threaded edge.



Fig. 9 - Operation 9. File the excess babbitt from around the edge, leaving a shoulder one-sixteenth of an inch wide. Do not remove the glass tape from the conductor section until this operation is complete.



Fig. 8 - Operation 8. This operation is one of the most important of the series. The molten babbitt must be cooled IMMEDIATELY. A pail of water containing a rag should be provided for this purpose. Place the wet rag around the socket until the surface of the babbitt appears to solidify. Remove the babbitted socket from the vise and plunge it into the water for further cooling. When cool, remove it from the water and pull the socket away. The babbitted section is shown in figure 9.



Fig. 10 - Operation 10. Remove the glass tape. Roll back and carefully cut off the nylon sheath covering the conductor section. Separate the conductors and the fillers. Cut away the fibrous fillers and the rubber center filler. Cleanse the conductors with a rag dampened in solvent.



## SENSING UNIT CONNECTIONS



Fig. 11 a, b, c. - Operation 11. Designate one of the conductors number 1. Number the remaining conductors in clockwise rotation for easy identification. The conductors are twisted with self-vulcanizing rubber tape and coiled the 1/4 inch diameter thermistors (Fig. 11b, 11c) are to be used, cut the two appropriate conductors 1 1/2 inches from the babbitt face and remove the rubber insulation one-quarter of an inch from the ends. Solder the leads of the temperature-sensing unit to the conductors. Insulate the soldered joints with self-vulcanizing rubber tape that has been cut into 1/4-inch-wide strips. When applying the insulating tape, stretch it until it becomes quite thin and many folds are required to cover the joint and adjacent area.

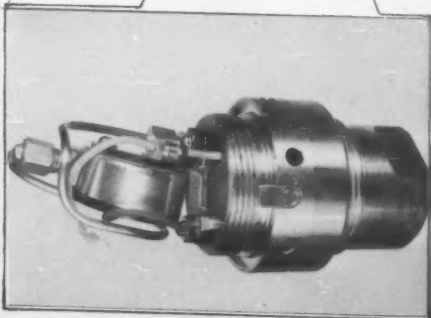


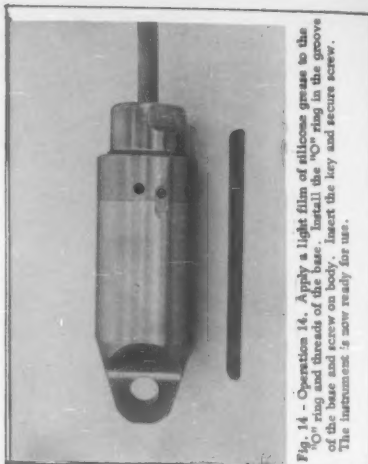
Fig. 13 - Operation 13. Place a rubber "O" ring and a feed-through nut on each conductor. Lubricate "O" rings and nuts lightly with silicone grease. Work the "O" ring down into the threaded hole so that the top thread is covered. Solder the nut and "O" ring to the conductor. An upward and counter-clockwise pull on the conductor will prevent severing the conductor by allowing it to work within its insulation. Tighten the nut carefully until at least two complete threads are engaged. The nut should be snug at this point with optimum seal. Any further tightening may sever the wires without apparently damaging the rubber insulation.



Fig. 14 - Operation 14. Apply a light film of silicone grease to the "O" ring and threads of the base. Install the "O" ring in the groove of the base and screw on body. Insert the key and secure screw. The instrument is now ready for use.



Fig. 12 - Operation 12. Insert necessary conductors into feed-through holes in the sensing-unit housing. Place the thermistor unit inside the base in a manner that will allow the babbitted section to move forward without pinching or cutting the conductors. Grease the babbitt plug and the threads of the socket. Tighten the socket firmly. DO NOT TURN THE BASE--as this will twist the conductors.



After the feed-through nuts are in place, solder a terminal to each conductor end and connect to the pressure potentiometer.

#### LITERATURE CITED

McNEELY, RICHARD L.

1958. A Practical Depth Telemeter for Midwater Trawls. *Commercial Fisheries Review*, vol. 20, no. 9 (September), pp. 1-10. (Also Separate No. 522).

1959. A Practical Depth Telemeter for Midwater Trawls. *Modern Fishing Gear of the World*, Fishing News (Books), Ltd., London, pp. 363-368.

--By Richard L. McNeely, Electronic Scientist, Branch of Exploratory Fishing, Division of Industrial Research, Seattle, Wash.



## California

### AERIAL CENSUS OF COMMERCIAL ABALONE FISHING CONTINUED:

Airplane Spotting Flight 60-6-Abalone: The shoreline from Monterey to Morro Bay and the Channel Islands of San Miguel, Santa Rosa, Ana-



Fig. 1 - Airplane Spotting Flight 60-6 (March 16, 1960), to locate specific areas of commercial diving on opening day of abalone season.

capa, Santa Barbara, San Clemente, and Santa Catalina was surveyed from the air on March 16, 1960, by the California Department of Fish and Game Twin Beechcraft to locate specific areas of commercial diving on the opening day of the abalone season.

From Monterey south to Morro Bay the water was dirty and the ground swells were high. However, one boat was operating just north of Pt. Estero. Among the Channel Islands the weather was better, the swells were diminished and the water clearer. Two boats were observed operating at Santa Barbara Island.

Kelp apparently has maintained itself among the Channel Islands. Conditions appeared to be about the same as when observed on December 5, 1959. Along the mainland, north of Morro Bay, the kelp beds were still present although some showed signs of deterioration from the winter storms.

Note: Also see *Commercial Fisheries Review*, March 1960, p. 16.

\* \* \* \* \*

### CRAB FISHING AREA AND INTENSITY STUDIES CONTINUED:

Airplane Spotting Flight 60-2-Crab: The commercial dungeness crab fishing areas from Monterey to the California-Oregon border were surveyed from the air on January 20-21, 1960, by the California Department of Fish and Game Cessna 182 to determine the fishing localities and the relative density of crab gear of the northern California crab fleet.

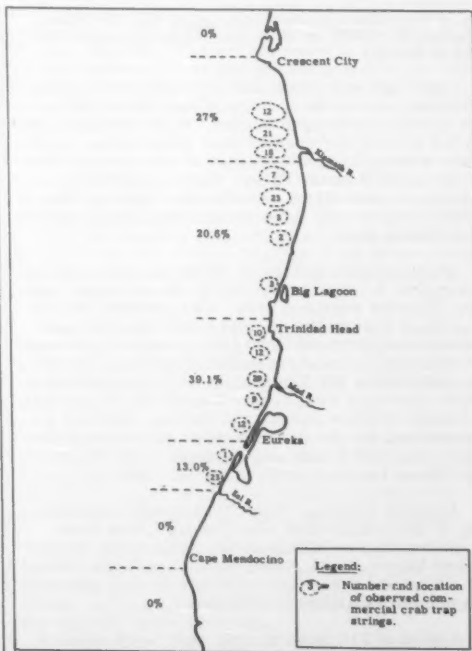


Fig. 1 - Airplane Spotting Flight Cessna 182, 60-2 Crab (January 20, 1960), to study crab fishing areas and intensity of fishing.

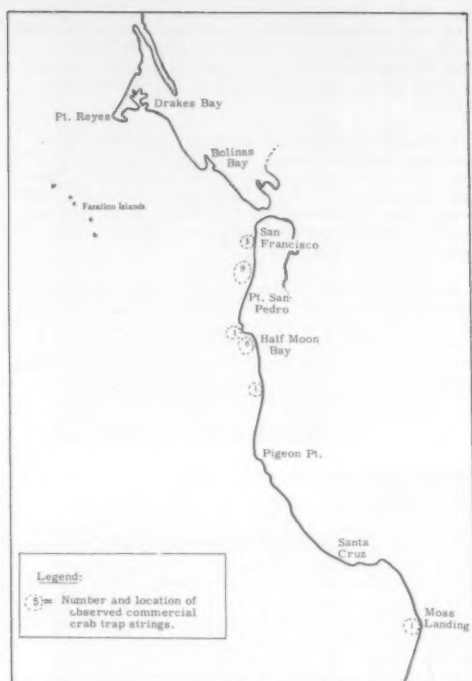


Fig. 2 - Airplane Spotting Flight Cessna 182, 60-2-Crab (January 21, 1960), to study crab fishing areas and intensity of fishing.

Light and sea conditions were good during the northern part of the survey--Cape Mendocino to the California-Oregon border. Rain and high seas on the second day created poor observation conditions during the southern part of the survey--Monterey to the Russian River. These conditions forced eventual flight cancellation, limiting the southern survey to the area between Monterey Bay and Drakes Bay.

A total of 207 strings of crab gear was counted during the 2-day survey: 184 in the northern area and 23 in the southern area. The greatest concentration of gear in the northern area was between Eureka and Trinidad Head (39.1 percent) with lesser concentrations between Crescent City and the Klamath River (27.7 percent) and between the Klamath River and Freshwater Lagoon (19.0 percent). Although relative intensity of fishing could not be determined for the southern area due to poor visibility, concentrations of gear were observed at Half Moon Bay and north of Pt. San Pedro.

**Airplane Spotting Flight 60-4-Crab:** The survey of the commercial crab fishing areas from Monterey to the California-Oregon border was continued March 14-15, 1960, to determine the fishing localities and the relative density of crab gear of the northern California crab fleet.

A total of 310 lines of crab gear were counted during the 2-day survey, 122 (39 percent) in the southern fishery and 188 (61 percent) in the north-

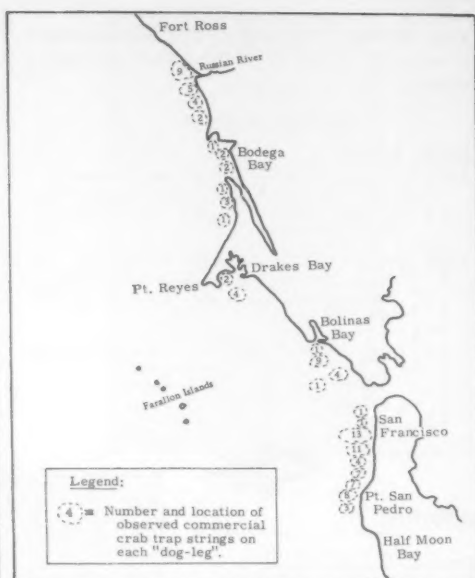


Fig. 3 - Airplane Spotting Flight Cessna 182, 60-4-Crab (March 14, 1960), to study fishing areas and intensity of fishing.

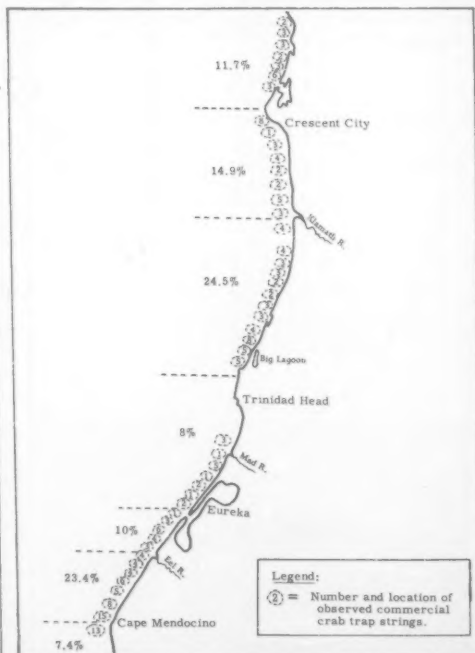


Fig. 4 - Airplane Spotting Flight Cessna 182, 60-4-Crab (March 15, 1960), to study fishing areas and intensity of fishing.

ern fishery. In the southern crab fishery most of the trap strings (51.6 percent) were observed between the Golden Gate and Pillar Pt.

In the northern fishery about half of the gear was north of Trinidad Head and half south. Shifts in gear had taken place since the January 20 flight and there were fewer sets--down 31 percent off Eureka and more--up 31 percent--south of the Eel River. There was also an apparent shift of gear to the area north of Crescent City--up 12 percent--from the Klamath River--Crescent City area--down 13 percent.

Note: Also see Commercial Fisheries Review, May 1960, p. 15.

\*\*\*\*\*

### BARRACUDA AND WHITE SEA BASS SURVEY CONTINUED IN GULF OF CALIFORNIA, MEXICO:

M/V "Alaska" Cruise 60A1--Barracuda--White Sea Bass: The Gulf of California, Mexico, area was surveyed (January 19-February 9, 1960), by the California Department of Fish and Game research vessel *Alaska*: (1) to explore for and collect specimens of white sea bass, *Cynoscion nobilis*; (2) to make oceanographic observations; (3) collect sardines; (4) to give general assistance to the University of California at Los Angeles field party; and (5) to collect live oysters and other shellfish for possible transplanting into southern California waters.



M/V *Alaska* Cruise 60A1--Barracuda--White Sea Bass (January 10-February 9, 1960).

Weather, a primary factor of all field expeditions, was of a generally favorable nature, permitting accomplishment of all the basic objectives. Only one of three major disturbances hampered operations. The other two storms occurred en route to and from the Gulf. On a few occasions strong winds restricted fishing to protected bays. Short winter days and great distances limited activities.

**SEA BASS--OCEANOGRAPHIC OBSERVATIONS:** Gill nets were the major fishing or sampling tool used in the search for white sea bass. An average of five nets per night (range 3 to 8) were fished at 14 different localities from San Jose Island in the south to Punta San Fermin in the north, including Angel de la Guardia, San Esteban and Tiburon Islands. In all 68 gill nets were set, at various depths ranging from 75 fathoms several miles from land to shallow waters close to shore. At each location nets were set in as many different habitats as time and equipment permitted.

A total of 20 white sea bass was taken in gill nets at Tiburon Island, was along the western side of the Gulf from San Francisquito Bay northward. The coastal waters along the Mexican mainland were not fished. Sport and commercial fishermen, however, report taking them along the mainland coast from Guaymas north. All the fish were taken close to shore in depths ranging from 3 to 15 fathoms. The water temperatures, at point of capture, ranged from 14.3 to 16.0 C. (57.7 to 60.8 F.). A catch of 13 sea bass near Monument Point, Tiburon Island was the exception to the generally solitary catches in the other areas. These fish were of medium to large size ranging from 746 to 1,385 mm. total length (29.3 to 54.5 inches). In general, the larger individuals were taken in the northern and warmer sections: San Luis Gonzaga Bay and Pt. San Fermin. The gonads were in various stages of development, up to and including a running ripe female. Attempts to fertilize the eggs from this ripe fish proved futile, perhaps due to the lack of mature sperm.

Morphometrics were taken of all the white sea bass while in the fresh state. These data will be used for comparison with the original description of *Cynoscion nobilis*. Eleven of the 20 fish were frozen for detailed comparisons with specimens from California waters. Scales of all were saved for age analysis. Of 11 stomachs examined, all were empty.

South of the Gulf's mid-section, below San Francisquito Pt., fishing in 3 widely separated localities did not yield white sea bass or any other sciaenids, although many are known to inhabit these waters.

A fish trap was baited and set in rocky habitat at 8 localities. No white sea bass were taken with this gear. Hook and line fishing at each anchorage and from a skiff at various places also failed to produce sea bass.

Hydrographic observations were limited to: water temperatures taken with recording and bucket thermometers, thermarine recorders and a Hubbs' casting thermometer, and water samples for salinity determinations.

The surface water temperatures registered 19.0 C. (66.2 F.) in the vicinity of La Paz, grad-

ually cooled to a low of  $13.6^{\circ}\text{C}$ . ( $56.5^{\circ}\text{F}$ .) in the Gulf's mid-section and warmed slightly to  $16.0^{\circ}\text{C}$ . ( $60.8^{\circ}\text{F}$ .) in the upper Gulf off Pt. San Fermin. Vertical temperatures of the upper Gulf from bathythermograph tracings were relatively uniform at  $14^{\circ}$  to  $16^{\circ}\text{C}$ . ( $57^{\circ}$  to  $61^{\circ}\text{F}$ .) Around Angel de la Guardia, San Esteban and Tiburon Islands, areas influenced by strong currents, a large deep body of water of even temperature was also evident; however, it was slightly colder than the waters to the north ranging from  $13^{\circ}$  to  $15^{\circ}\text{C}$ . ( $55.4^{\circ}$  to  $59.0^{\circ}\text{F}$ .) In general, these observations agree with predictions of the situation in the upper Gulf for this time of the year. A more refined analysis will be available with the processing of the salinity samples by the Scripps Institution of Oceanography.

To aid the Scripps Institution of Oceanography's study of the surface currents, 96 drift bottles were released at various points, primarily in the upper Gulf where the white sea bass were found.

The above ecological observations indicate that a major portion of the upper Gulf is available, temperaturewise, to the white sea bass population for at least part of the year. Recent studies by Scripps indicate that favorable thermal habitat is available throughout the year in the central areas.

**SARDINES:** Sardines were found at 2 localities, off the southeast end of Angel de la Guardia Island on January 23 and at Pt. San Fermin on the night of January 31-February 1. In neither instance was it possible to obtain live fish, and samples of about 25 fish each were preserved for the Pelagic Fish Investigation's racial studies. The school of sardines at Angel de la Guardia Island was small and wild and remained under the night light only for a short period. These fish were collected with hook and line using Paulas' lures. The presence of sardines at Pt. San Fermin was not detected until about midnight when a small sampling gill net was hauled from under the night light. These fish were mixed with other species, including grunion and jack smelt. The surface water temperatures in both places at time of collection was similar, ranging from  $15.7^{\circ}$  to  $16.6^{\circ}\text{C}$ . ( $60.3^{\circ}$  to  $61.9^{\circ}\text{F}$ .)

**UNIVERSITY OF CALIFORNIA AT LOS ANGELES:** The UCLA field party of four, and a biologist of the California Department of Fish and Game joined the cruise at San Luis Gonzaga Bay on January 22 and left at the same place on January 30. They were transported to the central islands, where four major collecting sites were occupied; 2 on Angel de la Guardia Island, Puerto Refugio and the southeast end; 1 at San Esteban Island and 1 at Tiburon Island. Good collections of fish were made at each locality, utilizing gill nets, hook and line, trawl gear, and rotenone.

**OYSTERS:** No live oysters or other shellfish suitable for transplanting into southern California waters or the Salton Sea were found. In fact the only oysters observed were fossils, having expired about 20,000 years ago.

**BARRACUDA:** The different activities yielded a wide variety of fish besides the white sea bass. Of prime interest to the project was the capture of a number of barracuda, *Sphyrna* sp., at several widely separated localities between San Jose Island and San Luis Gonzaga Bay. It appears that this small undescribed barracuda is the only one

in the Gulf, for *Sphyrna argentea* has not been taken here and *S. ensa* is reported only from the very southern end. *Sphyrna* sp. also occurs on the outer coast of Baja California at least as far north as Cedros Island.

Note: Also see *Commercial Fisheries Review*, January 1960, p. 28.

\*\*\*\*\*

## PELAGIC FISH POPULATION SURVEY CONTINUED:

**M/V "Alaska" Cruise 60A2-Pelagic Fish:** The coastal waters off Baja California from Todos Santos Bay southward to Magdalena Bay, were surveyed (February 18-March 3, 1960) by the California Department of Fish and Game research vessel *Alaska* to collect samples of sardines for genetic studies in cooperation with the U. S. Fish and Wildlife Service. The genetic studies include (a) serological tests to delimit the ranges of sardines possessing northern and southern blood "types." (The "northern type" was found off central California and the "southern type" off southern California prior to the fishing season. Since the 1959 season opened in September, sardine samples all have been of the northern type); and (b) detailed morphometric studies, on the above fish, to find morphological characters which may be related to genetic types. Other objectives were to collect sardine specimens for fecundity studies; and to make incidental collections requested by other investigations.

A total of 47 night light stations was occupied. Sardines were collected at 5 stations, northern anchovies at 5, jack mackerel at 3, and Pacific mackerel at 2 stations. The 5 sardine samples were combined into 3 areas (Blanca Bay, Cedros Island and Magdalena Bay) for the genetic study. Serological tests indicated that all sardines sampled were of the "southern type".



M/V *Alaska* Cruise 60A2-Pelagic Fish (February 18-March 3, 1960).



Approximately 100 large sardine schools were observed 30 miles NNW. of Cedros Island. Very few sardines were seen in any other areas.

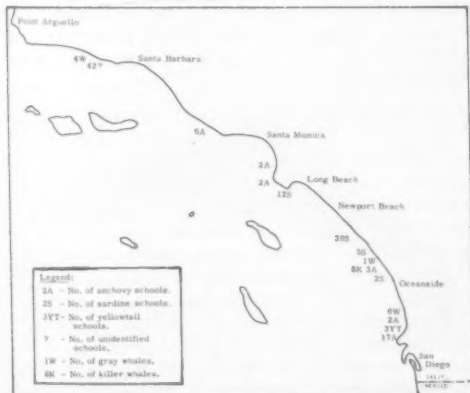
Small anchovies were observed scattered on the surface continuously from Punta Baja to Cape San Quintin, a distance of about 25 miles. Concentrated schools were interspersed within these scattered anchovies. Some fish were caught by holding a brail over the side while under way. In this area anchovies would "flip" and disappear the instant the night light was turned on. However, one light station attracted fish and 4,500 were captured in one blanket net set.

Sea surface temperatures ranged from  $12.4^{\circ}\text{C}$ . ( $54.3^{\circ}\text{F}$ .) at San Quintin Bay to  $17.15^{\circ}\text{C}$ . ( $62.9^{\circ}\text{F}$ .) at Magdalena Bay. In general, surface temperatures were cooler than those observed in 1959.

**Airplane Spotting Flight 60-3-Pelagic Fish:** The inshore area from the California-Mexico border north to San Francisco Bay were surveyed from the air (February 15-18, 1960) by the Department's Cessna 180 (3632C) to determine the distribution and abundance of pelagic fish schools.

Weather and visibility conditions were perfect for the first three days but a storm on the fourth day made over-water observations impossible.

No large concentrations of schools were seen in the area surveyed and none was found north of Pt. Arguello. Good coverage of Monterey Bay and the area between Monterey Bay and San Francisco was possible but not a single school was found.



Airplane Spotting Flight 60-3 (February 15-18, 1960).

Only 32 anchovy schools were observed, and of these, 17 were concentrated in a "school group" near La Jolla Pt. while the rest were scattered from La Jolla to just north of Pt. Dume.

Two small groups of sardines were seen, the largest (39 schools) was 4 miles south of Abalone Pt., Laguna Beach, and the other (12 schools) was 2 miles offshore between Pt. Vicente and Pt. Fern. An additional 7 schools were scattered between Oceanside and San Clemente.

Twelve migrating gray whales in various places, 8 killer whales off Camp Pendleton and 3 schools of yellowtail off La Jolla Pt. were seen.

A group of 42 large, deep, unidentified schools was seen near Coal Oil Pt., Santa Barbara. It is presumed that these schools were composed of sardines or Pacific mackerel but positive identification was not possible.

The water in the area surveyed was generally clean and blue-green in color. Many birds and large amounts of floating kelp were observed in southern California. Kelp beds appeared to be in particularly poor condition.

**Airplane Spotting Flight 60-5-Pelagic Fish:** The aerial survey was continued (March 14-16, 1960) along the inshore area from the Mexican border to San Francisco Bay, by the Department's Cessna 180 (3632C) to determine the distribution and abundance of pelagic fish schools.

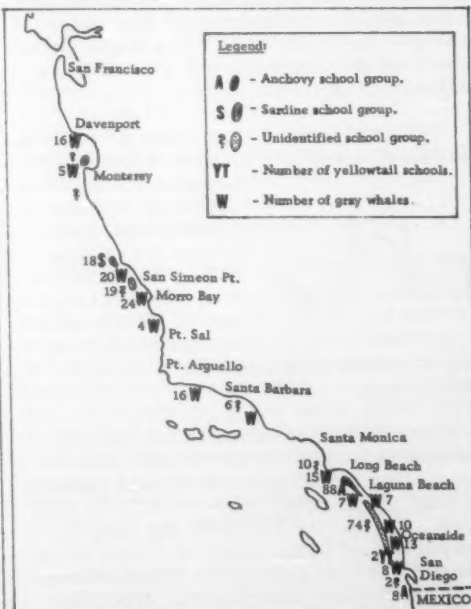
Weather, visibility, and water conditions were generally very good. A total of 244 schools of fish was observed during the flight. Of these, 96 were identified as anchovies, 18 as sardines and 2 as yellowtail. The remainder was not positively identified.

Anchovies were found between Huntington Beach and Laguna Beach (88 schools) and off Pt. Loma (8 schools).

The 2 yellowtail schools were seen off La Jolla Point in almost the exact spot where 3 schools of yellowtail were observed during the February flight.

A small group (18 schools) of sardines was found just north of San Simeon, 2 miles off Sierra Nevada Point.

The majority of the identified schools (74) was seen while flying a straight course between La



Airplane Spotting Flight 60-5 (March 14, 15, and 16, 1960).

Jolla and Laguna Beach, approximately 5 miles offshore. Although not positively identified, these schools behaved in a manner typical of sardines or mackerel. Ten, large, deep, purple-colored spots were seen about 2 miles off Point Vicente. Large quantities of jack mackerel were taken in this general area a few days after the survey. Only 16 schools were seen in Monterey Bay; they were quite deep and remained unidentified.

Migrating California gray whales were observed from Monterey Bay to San Diego. They occurred singly or in groups of up to 10. A total of 131 was counted and all were moving up the coast.

Note: Also see *Commercial Fisheries Review*, March 1960, p. 17.



## Canned Fish

### DISTRIBUTION OF CANNED TUNA, SALMON, AND SARDINES:

A shipper survey of canned tuna, salmon, and sardines was recently finished by the U. S. Bureau of the Census for the U. S. Bureau of Commercial Fisheries. The purpose was to obtain data on the (1) geographic location of the market; (2) the commodities that are moving, including number of cases by can size and type, and the class of customer; (3) how much of the pack moves into multi-unit retail food channels, how much into Government, and how much into all other channels. The data are based on shipments in the 12 months ended June 30, 1959.

The study shows that about 23 million standard cases of canned fish were

shipped during the twelve months. Canned tuna comprised more than half of the total--about 13 million cases. Shipments of canned salmon

and sardines accounted for 5 million cases each.



Distribution of canned tuna and sardines was largest in the Pacific region, accounting for 27 percent and 16 percent of total shipments, respectively, in that area. California received the largest proportion of both canned tuna and canned sardine shipments which eventually are further distributed. Distribu-

tion appeared largest in this region because there is a movement from canner to warehouses in the case of tuna and sardines, and for export from California for sardines.

The East North Central Region (Ohio, Indiana, Illinois, Michigan, and Wisconsin) received 23 percent of total shipments of canned salmon. On the West Coast, Washington received 13 percent of total shipments.

Chunk style tuna accounted for 61 percent of total tuna shipments. The one-half pound (6½-7 oz. net weight of contents) can pack represented 85 percent of tuna shipments. About 39 percent of total tuna pack moved into multi-unit retail food channels, 3 percent channeled through Government, and 58 percent into all other channels.

Red and pink salmon, in almost equal amounts, comprised about 67 percent of total salmon shipments. The one-pound can was the most popular pack for salmon, representing 65 percent of distribution. The multi-unit purchasers distributed 23 percent of canned salmon, with only 1 percent channeled through Government, and 76 percent into all other channels.

The distribution of sardines by style of pack was 38 percent oil pack; 24 percent tomato sauce; 6 percent mustard, and the remainder unidentified. Keyless sardines accounted for 93 percent of all sardine shipments with 56 percent packed in one-pound cans. Almost all of the sardines packed with key were distributed in the ¼-pound-can sizes, with oil pack amounting to two-thirds of this distribution. About 17 percent of all canned sardines were distributed through multi-unit retail outlets, 1 percent through Government, and the remainder through other channels.



### Cans--Shipments for Fishery Products, January-February 1960

Total shipments of metal cans during January-February 1960 amounted to

13,609 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 12,445 tons in the same period a year ago. Canning of fishery products in January-February this year was confined largely to tuna, shrimp, Gulf oysters, plus a substantial increase in the canned pack of jack and Pacific mackerel.

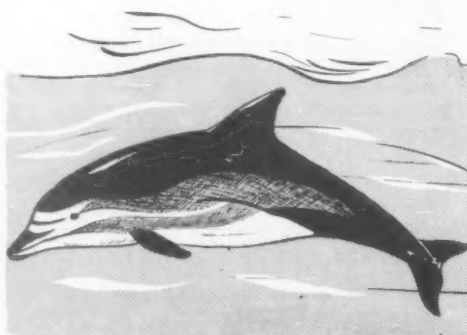
Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



## Central Pacific Fishery Investigations

### ALTERATIONS OF RESEARCH VESSEL "CHARLES H. GILBERT":

An underwater observation chamber has been installed in the bow of the re-



Dolphin (*Delphinus bairdi*).

search vessel Charles H. Gilbert of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu. Use was made of the bow chamber in observing porpoises riding the vessel's bow wave. Their posture while riding the bow wave was a curious one--a rigid arc with both head and tail depressed. This was quite different from the suggested

posture where the tail is turned upward in the bow wave; in fact, the observed posture seemed most inappropriate for its apparent function, that of utilizing a pressure wave at the vessel's stern for a free ride.

Shipyard alterations of the Charles H. Gilbert were completed on April 18, 1960, at Portland, Oreg. These alterations included a new main engine, new quarters and laboratory space, a new pilothouse, the installation of a trawling winch and provisions for handling large trawls overside, and the underwater observation chamber.

\*\*\*\*\*

### HAWAIIAN SKIPJACK TUNA RESEARCH TRENDS, MARCH 1960:

Skipjack size measurements made by biologists of the Honolulu Laboratory of the U. S. Bureau of Commercial Fisheries showed two weight groups to be present in the catch. The most abundant group had a mode at 25 pounds; the other had a mode at 8 pounds. There was also an ill-defined group with a mode at 4.5 pounds.

The estimated March total Hawaiian landings of 310,000 pounds of skipjack were slightly above average for the month. The 1960 data show that the landings through March were composed of small to very large fish. Approximately 50 percent of the catch was fish of less than 10 pounds; 30 percent, fish of more than 22 pounds. This comparatively high percentage of large fish is somewhat typical for the January-March period.

The captive skipjack continue to thrive. Five 2-pound skipjack captured on February 27 and one 6-pound skipjack captured on February 15 are actively feeding on frozen shrimp and squid. With the successful maintenance of these tuna in captivity, plans were made during the month for construction of larger tanks in order that the conditioned response studies may be accelerated.

Note: Also see Commercial Fisheries Review, January 1960, p. 30.



## Federal Purchases of Fishery Products

### DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MARCH 1960:

**Fresh and Frozen Fishery Products:**  
For the use of the Armed Forces under the Department of Defense, 1.9 million

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, March 1960 with Comparisons							
QUANTITY				VALUE			
March		Jan.-Mar.		March		Jan.-Mar.	
1960	1959	1960	1959	1960	1959	1960	1959
(1,000 Lbs.)				(\$1,000)			
1,934	2,023	5,248	4,949	1,081	1,179	2,730	2,800

pounds (value \$1.1 million) of fresh and frozen fishery products were purchased in March 1960 by the Military Subsistence Supply Agency. This exceeded the quantity purchased in February by 6.4 percent, but was 4.4 percent under the amount purchased in March 1959. The value of the purchases in March 1960 was higher by 18.5 percent as compared with February, but 8.3 percent less than for March 1959.

During the first three months of 1960 purchases totaled 5.2 million pounds (valued at \$2.7 million)--an increase of 6.0 percent in quantity, but lower by 2.5 percent in value as compared with the similar period in 1959.

Prices paid for fresh and frozen fishery products by the Department of Defense in March 1960 averaged 55.9 cents a pound, about 6.1 cents above the 49.8 cents paid in February but 2.4 cents less than the 58.3 cents paid during March 1959.

**Canned Fishery Products:** Tuna was the principal canned fishery product purchased for the use of the Armed Forces

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, March 1960 with Comparisons								
Product	QUANTITY				VALUE			
	March		Jan.-Mar.		March		Jan.-Mar.	
	1960	1959	1960	1959	1960	1959	1960	1959
	(1,000 Lbs.)				(\$1,000)			
Tuna . . .	252	116	1,269	869	122	58	573	387
Salmon . .	-	-	-	-	-	-	-	-
Sardine . .	15	228	46	265	6	27	20	40

during March this year. In the first three months of 1960, purchases of canned tuna were up 46.0 percent in quantity and 48.1 percent in value, but purchases of canned sardines were down about 82.6

percent in quantity and 50 percent in value as compared with the same period in 1959. No canned salmon was purchased during January-March 1960 and 1959.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.



## Fisheries Loan Fund

### LOANS APPROVED MARCH 1-31, 1960:

As of March 31, 1960, a total of 735 applications for fisheries loans totaling \$22,657,331 had been received since the program was started. Of these, 395 (\$9,105,588) have been approved, 249 (\$6,891,314) have been declined or found ineligible, 58 (\$2,505,756) have been withdrawn by applicants before being processed, and 33 (\$3,116,722) are pending. Several of the pending cases have been deferred indefinitely at the request of the applicants. Sufficient funds are available to process new applications when received.

The following loans have been approved during March 1960:

**New England Area:** Michael B. Smith, New Bedford, Mass., \$60,000.

**South Atlantic and Gulf Area:** John J. Ross, Biloxi, Miss., \$40,142.

**California:** Darrel W. Furber, Arcata, \$4,672; Bernard Ostfeld, Fort Bragg, \$13,000; Frank Medina, et al, San Diego, \$110,000; and Inez Peterson, et al, San Diego, \$80,000.

**Pacific Northwest Area:** Kenneth Knaak, Newport, Oreg., \$23,700; Harvey Benedict, Olympia, Wash., \$4,000; Donald A. Simson, Seattle, \$6,000; and Richard S. King, Tacoma, Wash., \$8,470.

**Great Lakes Area:** Clare A. Thomas, Unionville, Mich., \$7,200.

**Alaska:** William Spaulding, Auke Bay, \$4,000; William H. Dore, Douglas, \$6,500; W. H. James, Halibut Cove, \$5,200; Moss Brothers, Homer, \$3,400; Ernest O. Rude, Juneau, \$3,500; Ben H. Fleenor, Ketchikan, \$3,500; John R. Malutin, Kodiak,

\$7,600; Oscar Dyson and Seldon Nelson, Kodiak, \$18,000; Howard Ulrich, Pelican, \$2,500; Marion L. Frink, Petersburg, \$15,000; James R. Post, Petersburg, \$11,670; and Robert O. Brown, Sitka, \$4,000.



## Fishery Export Trade Promotion Meeting Announced

A fishery export promotion conference, sponsored by the U. S. Department of the Interior in cooperation with the Department of Commerce, was scheduled for June 20, 1960, in the Interior Building, Washington, D. C. The meeting is a part of a series of conferences being held with private trade interests under the Executive Department's program to promote the expansion of United States exports. Various Government departments have been asked to improve their services in the development of new markets overseas and to enlist the efforts of private business in expanding sales abroad. Among other things, steps will be taken to strengthen the trade promotion services of the Government, to expand and give priority to the commercial activities of the Foreign Service, to place greater emphasis on the prompt reporting of information useful to American exporters, to establish new overseas centers, and make full use of trade fairs, trade missions, and other means of stimulating the interest of foreign buyers in United States products.

The Department of the Interior is seeking to get the views and active support of the fishing industry. At the meeting, consideration was given to the present export situation. Advice was obtained of representatives from the fishing industry as to specific moves the Government might undertake to give maximum assistance to increasing sales of fishery commodities abroad. The objective was to identify specific impediments to increased export trade and to attempt to evaluate the additional sales that might result if those impediments were removed or modified.

Also requested were suggestions for specific reductions in tariffs imposed by

foreign countries which will be of the greatest benefit to exporters of fishery products. Considerable progress has already been made in the relaxation of quantitative trade controls, exchange restrictions, and other barriers to the flow of American goods abroad, but advice on specific problems in individual countries was sought from industry sources. Suggestions from industry will be helpful to those responsible for developing instructions to U. S. representatives at tariff negotiations and international meetings dealing with trade restrictions.

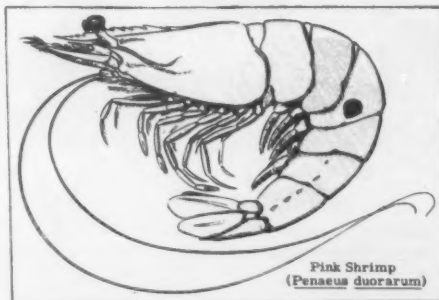


## Florida

### PINK SHRIMP--MOST VALUABLE COMMERCIAL FISHERY:

The pink shrimp, Florida's most valuable commercial fishery, is the subject of an interesting report of the results to date of shrimp research conducted by The Marine Laboratory of the University of Miami. This research was started in 1952 and is sponsored by the Shrimp Association of the Americas, the U. S. Fish and Wildlife Service, and the Florida State Board of Conservation.

Much of the knowledge sought in the research is produced through tagging operations on the fishing grounds from catches of commercial fishing craft. It has been found that the female pink shrimp have an estimated winter growth of five counts per pound per month, while the males grow seven counts. Counts signify the number of shrimp per pound with heads off. Also, considerable was learned of the migrations of the shrimp. One shrimp from the experiment at Flamingo was recovered just north of Key West. It had been out 123 days and had traveled about 60 miles in a straight-line distance from where it had been tagged. The importance of this recovery lies in the support it provides to the theory that the Everglades National Park estuary is the nursery ground which supplies the Tortugas grounds.



Pink Shrimp  
(*Penaeus duorarum*)

The majority of the recoveries of tagged shrimp is made within 10 miles from the point of tagging. The majority of recoveries of both sexes is made within 50 days. It has been found that the net movement of shrimp is generally northwesterly on the Tortugas grounds.

Figures on shrimp catches in Florida reveal that the State is second in production in the United States, being exceeded only by Texas. In 1958, latest year for which complete data are available, the shrimp fishermen of Florida produced 51 million pounds of all types of shrimp.



The value of the shrimp catch was \$18,518,000 as compared with \$29,353,000 for the total value of all of Florida's salt-water fisheries landings.

The principal grounds for the pink shrimp is an area of about 1,500 miles immediately west of the tip of Florida between Key West and Dry Tortugas. There are other species of shrimp on the Tortugas grounds besides the pink shrimp, but the pink shrimp is the only species that is at all common in the catches made there.

Shrimp fishing on the Tortugas grounds is by otter trawls and the principal ports at which the catches are landed are Key West, Marathon, Naples, and Fort Myers. The larger shrimp are taken for food, but there is also a considerable fishery for smaller shrimp which are used as bait, mainly by anglers.

The research conducted is designed to learn about the life history of the shrimp, including knowledge of its early life and feeding habits, growth and mortality, spawning behavior, migration, and about the fish predators that feed on it. Only by ascertaining such data can proper management of the shrimp fishery be undertaken.

The Tortugas shrimp grounds are bounded on the south and west by deep water which appears to be a natural barrier to their movement in those directions. To the east the shallow waters of Florida Bay contain small shrimp and from this area the majority of pink shrimp is believed to migrate to the Tortugas grounds. To the north is an area which is largely untrawlable, probably providing protection to the main population of pink shrimp.



## Frozen Fish

### RESTAURANT CHAINS USE HALF-BILLION POUNDS OF FROZEN FOOD A YEAR:

Chain restaurants are using more frozen foods than ever before in history,



according to a survey made by the Restaurant Editions of Chain Store Age magazines. Questionnaires returned to Chain Store Age by top food service executives in the chain drug, chain variety store, chain restaurant, and chain employee feeding fields reveal that 129,410,520

pounds of frozen meat, 179,923,920 pounds of frozen vegetables, 83,563,596 pounds of frozen fruit, and 96,440,504 pounds of frozen fish were used yearly by a total of 16,036 chain food service installations around the United States.

Forty major restaurant chains operating a total of 2,916 units reported to Chain Store Age that frozen fish was used in 2,666 units.

The most popular types of frozen fish, according to the Chain Store Age survey, are haddock (used in 2,028 out of 2,666 units reporting), fillet of sole (1,187 units), shrimp (794), halibut (562), trout (373), scallops (282), cod (169), swordfish (144), and ocean perch (116).



## Fur Seals

### PRICES FOR ALASKA FUR-SEAL SKINS AT SPRING AUCTION:

At the semi-annual auction sale of Alaska fur-seal skins held in St. Louis on April 9, 1960, a total of 22,561 United States-owned fur-seal pelts was sold for \$2,293,580 for the account of the United States Government. The skins are products of the sealing operations of the U. S. Bureau of Commercial Fisheries on the Pribilof Islands.

U. S.-owned fur-seal skins offered and sold at this auction were 1,457 skins less than the number sold at the last sale (October 23, 1959) with the total value of the skins down by 7.5 percent, and average price per skin lower by about 1.5 percent. At the 1959 spring auction held on April 10, 24,578 United States-owned fur-seal skins were sold for \$2,451,562 and the average price per skin was \$99.75.

The auction's average prices for the skins by types were: dark-brown or matara \$99.34 per skin, black \$104.43, and the dark shade kitovi \$102.00. The average for all United States skins was \$101.66 per skin, or 2.0 percent per skin higher than the average price paid per skin at the 1959 spring auction. Japanese Government Alaska fur-seal skins sold: black \$105.81, matara \$97.47, total average \$99.99. All South Africa fur-

seal skins averaged \$45.98. Uruguay skins averaged \$50.18.

The sales of all fur-seal skins at this spring auction yielded \$3,656,706.50.

Noted: Also see *Commercial Fisheries Review*, December 1959 p. 49, and June 1959 p. 35.



## Maine Sardines

### CANNING SEASON FOR 1960 OPENS WITH NO SIGNS OF FISH:

The 1960 Maine sardine canning season legally opened on April 15, but no factories were in operation nor were likely to be until the latter part of May.

Veteran canners and fishermen saw no signs of sardine herring showing up along the coast for several weeks. This has been the pattern for the last few years. In 1959 the first fish in sizable volume were not taken until early June.

The Maine Sardine Council's Executive Secretary said that the same 31 plants that operated along the coast in 1959 from Portland to Robbinston were being put into readiness.

He said that the industry had a production goal of about 2,000,000 cases versus the 1959 short pack of 1,750,000 cases which was caused by a scarcity of fish.

The industry's inventory situation is a favorable one with many types and varieties of pack completely sold out. Prices and demand for the 1959 production have remained firm for the past several months, the Executive Secretary stated.

He said that there had been an increased demand for institutional and

military-type packs as a result of sales and promotional work by the Council. Further increases in the demand for these packs are expected in 1960.

\*\*\*\*\*

### ADVERTISING AIMED AT YOUTH EDUCATION:

The romantic story of Maine's \$20 million sardine industry is now being told in comic book format by the Maine Sardine Council.



This activity, aimed at school children as an educational feature, consists of several hundred thousand, eight-page, four-color booklets.

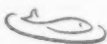
Appropriately entitled "Ricky and Debbie in Sardineland," the drawings take two attractive big city youngsters for a tour of the fishing grounds and canneries as well as a look into the past and future of the industry.

The Executive Secretary of the Council states that the booklets would be dis-

tributed free through schools, supermarkets, and other outlets.

"This is but one phase of a youth education program which we started last year in an effort to interest children in our industry and its products," the Secretary stated.

Other activities include a film strip on the industry and the use of home economists to introduce nutritious, low-cost sardine recipes in the school-lunch programs.



## Marketing

### EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SPRING-EARLY SUMMER 1960:

United States civilian per capita consumption of fishery products this spring and early summer is expected to be about the same as a year earlier. Some increase is likely for the fresh and frozen products, offsetting a prospective reduction for the canned. Retail prices of fishery products as a group are expected to continue lower than last year because of a likely reduction for the fresh and frozen products.

Total commercial landings of fish and shellfish as of May 1 were well on the

Brailing fish  
onto a vessel.



seasonal uptrend, and should continue to expand into the summer. Supplies of canned fishery products will remain below those of a year earlier at least until late summer when marketings of the sea-

sonally packed items--such as salmon and sardines--are at a high level. Canned tuna stocks currently are well below those of a year earlier, but this product is packed throughout the year. Cold-storage holdings of edible frozen fishery products were a little larger this April 1 than last. Such stocks usually are at the year's low-point in mid-spring, and then start building up seasonally.

Imports of edible fishery products are expected to continue at a high level. In 1959 they were equivalent to half of our total domestic production of food fish and shellfish.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's May 9, 1960, release of The National Food Situation (NFS-92).



## North Atlantic Fishery Investigations

### SPAWNING HABITS OF HADDOCK STUDIED ON GEORGES AND BROWNS BANKS:

M/V "Delaware" Cruise 60-4: A survey of the spawning habits of haddock on Georges and Western Nova Scotia Banks between 64° and 67° W. longitude was conducted (March 23-April 2, 1960) by the U. S. Bureau of Commercial Fisheries research vessel Delaware.

Surface and oblique plankton tows were made at 32 stations, primarily to assess the distribution of cod and haddock eggs. Samples of eggs collected were incubated to determine species composition. Trawling operations with the No. 36 trawl and the Breidfjord floating trawl were conducted at 4 stations. Bathythermograph casts and standard oceanographic observations were made.

On Georges Bank about 1,000 eggs a tow were taken and to the eastward about 200 a tow. Most eggs appeared to be about 7-10 days old. On Browns Bank about 95 percent of early stage eggs appeared dead or dying.

oooooooo

## North Pacific Exploratory Fishery Program

### MODIFIED OTTER-TRAWL EXPERIMENTS CONTINUED:

M/V "John N. Cobb" Cruise 45: Fishing gear development experiments were conducted by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb for 52 days. Tows were made on commercial trawling grounds off Destruction Island to Cape Flattery, Wash. The vessel returned to port on April 15, 1960. The work was a continuation of the otter-trawl modification project initiated in February 1959. Two types of modified otter trawls were tested: one, a "free-wing trawl," designed to increase the horizontal opening; and the other, a "blanket trawl" designed to increase the vertical opening. The experimental trawls were tested alternately on commercial fishing grounds with a standard 400-mesh Eastern trawl over the same bottom. In addition, preliminary experiments with an electrical catch-load-indicator were conducted.

In 22 tows (11 with the "free-wing trawl" and 11 with a standard trawl) the

comparative tows. Towing speeds varied from 1.6 to 2.8 knots (ground speed).

The "blanket" modification was compared on 13 tows--7 tows with the experimental gear and 6 with a standard trawl. Apparently the fish were capable of avoiding the "blanket trawl" since catches were consistently considerably lower than those with the standard gear. These tows were made on commercial rockfish grounds. Ground speeds ranged from 1.8 to 3.0 knots.

During the frequent periods of stormy weather offshore, instrumentation experiments were performed in the sheltered waters of the Straits of Juan de Fuca. Using the electrical trawl cable and accessory gear, tests were conducted to determine the feasibility of using instrumentation to provide a continuous catch-magnitude indication. These trials indicate that an electrical dynamometer placed on the cod end will indicate on an ammeter the progressive build-up of catch, the lack of catch, or a loss of catch.

Notes: Also see Commercial Fisheries Review, June 1959 p. 44.

\* \* \* \* \*

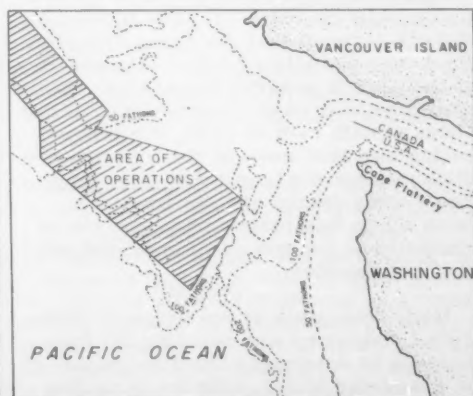
### EXPLORATORY BOTTOM-FISH TRAWLING OFF COAST OF WASHINGTON AND VANCOUVER ISLAND PLANNED:

M/V "John N. Cobb" Cruise 46: Bottom-fish trawling is the purpose of the cruise scheduled for the U. S. Bureau of



Fig. 1 - The U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

experimental gear did not produce significantly greater catches of flatfish. Modifications to the experimental gear late in the trip improved catches considerably; however, there was insufficient time for an adequate number of



Operational Area - Cruise 46 - M/V John N. Cobb.

Commercial Fisheries exploratory fishing vessel John N. Cobb during May and June. The vessel left May 2 for eight weeks of exploratory fishing off the Washington and Vancouver Island coasts.



### Oceanic Bacteria

#### UNIVERSITY OF MIAMI GRANTED FUNDS FOR EXTENSION OF RESEARCH:

A grant of \$30,000 has been made to The Marine Laboratory of the University of Miami by the National Institutes of Health to cover the costs of a four-year extension of studies of bacteria found in the ocean.

These bacteria, some of a distinct orange and red coloration, are toxic to fishes and sometimes kill them in large numbers. The studies concern the general biology of these bacteria which are found in the sediments and plant and animal waste in the ocean. The research is designed to ascertain just what part they play in the life contained in the ocean.



### Oysters

#### HEAVY LOSSES DISCOVERED IN LOWER CHESAPEAKE BAY:

Early in April this year, oysters were dying heavily in certain parts of the lower Chesapeake Bay. Virginia biologists have discovered that the same organism which was associated with Delaware Bay mortalities is present in the area. While some lower Chesapeake growers suffered a heavy death rate in 1959, the general feeling was that most of the losses were attributable to the fungus Dermocystidium. This spring deaths are not from this cause since this fungus attacks oysters primarily at the end of an extended period of hot weather.

Many biologists at the Virginia Fisheries Laboratory are devoting all their energies to determine the distribution of the suspected killer, with the hope that it can be confined to the area in which it is currently known to exist.

There has been a great deal of speculation among the people in all the Chesapeake area. Since the area of high mortality is located in areas of relatively high salinities it is hoped that the lower salinity beds will not be attacked.

\* \* \* \* \*

#### VIRGINIA BIOLOGISTS USE AUTO- TECHNICON TO SPEED UP RESEARCH:

Automation at the Virginia Fisheries Laboratory, Gloucester Point, is now allowing scientists to examine oysters twice as fast as in the past. A newly-installed Autotechnicon mechanically processes slides of oyster tissue, leaving the technicians free to prepare more oysters for the Autotechnicon to process.

According to the chief marine micro-technician, who has personally prepared about 2,000 slides of 1,500 oysters during the past year, "The Autotechnicon frees me from much of the drudgery of slide preparation. The two of us should be able to prepare oyster tissues for the scientist to read twice as fast as I could do it alone."

One of the most important though time-consuming problems of the Laboratory has been to discover the causes of oyster mortalities which have plagued the industry for many years. A major breakthrough occurred several years ago as a result of the significant work done by a Laboratory biologist and his associates in learning that Dermocystidium accounts for the deaths of many oysters during long hot dry summers. It has been possible to mark out areas where Dermocystidium is found and to point out natural conditions which will favor its growth and cause serious losses to planters. Biologists know that other parasitic plants and animals cause epidemics among shellfish at times.

The newly-established Microbiology-Pathology section of the Laboratory hopes to pin down other organisms involved in diseases of marine animals. Careful and rapid microtechniques are essential to these studies. With the new labor-saving Autotechnicon, the mortality research program will be greatly improved.





## Salmon

### KING SALMON ESCAPEMENT TO COLUMBIA RIVER SPAWNING GROUNDS GOOD:

The number of chinook or king salmon counted at Bonneville Dam on the Co-

lumbia River as they moved upstream is higher this year than by the same date last year, indicating good escapement



for the spring chinook salmon run in the river, the Director of the Washington State Department of Fisheries reported on May 5, 1960.

As of May 2, a total of 40,875 chinook had been counted over the Dam, compared to 35,000 by the same date last year. Salmon were moving over the Bonneville fishway at the rate of 5,000-6,000 a day.

The chinook catch in the commercial gill-net fishery, which opened April 30, has been generally poor. Most catches were made in the lower river, where fish are larger. Upstream catches have been less and fish are smaller, running only 10 to 15 pounds.

Early in May the river was dropping and clearing, making for good conditions for fish movement upstream. The Columbia River commercial gill-net salmon fishery, which was open until noon May 27, was conducted chiefly at night because of clear water.

\* \* \* \* \*

### MIGRATION STUDIES IN NORTH PACIFIC TO BE CONTINUED:

To continue studies of salmon migration on the high seas, two research vessels of the University of Washington College of Fisheries left early in April on a 5-months salmon-tagging voyage along the entire length of the Aleutian Islands from Unimak Pass to Attu.

The cruise is part of a long-range salmon migration study in the North Pa-

cific conducted by the Fisheries Research Institute of the University. Now in its fifth year, the project will be conducted with two chartered purse-seiners, the *Commander* and the *Renown*, under a \$256,000 contract with the U. S. Bureau of Commercial Fisheries.

The vast sea area centered around the Aleutian Islands is a "nursery" where many North American salmon go to mature before beginning their long journey back to their native rivers. In previous years, some of the tagged fish have been recovered in the rivers of Russia and Japan and have been found as far south as Oregon.

From a scientific standpoint, the long-term project is providing important new information on the life history of salmon. The results also will have an important effect on methods of conserving the valuable salmon runs. (University of Washington News Service, April 7, 1960.)

*Note:* Also see *Commercial Fisheries Review*, August 1957 p. 39; April 1958 p. 35; and September 1959 p. 41.



## Transportation

### STUDY OF EFFECTS OF NEW TRANSPORTATION EQUIPMENT ON FOOD QUALITY URGED:

Research to determine the effect on food quality of new equipment, such as mechanically-refrigerated trucks and railroad cars and thermostatically-equipped ice-bunker cars was advised by members of the U. S. Department of Agriculture's Transportation Research and Marketing Advisory Committee at its annual meeting in Washington, February 23-25, 1960.

Shippers need to know if they can increase load size without affecting quality with the new equipment now in service, the Committee noted. It specifically recommended that researchers seek to determine the effect of improved temperature control and air circulation on product quality, and the effect of load size and pattern on temperature, air circulation, bruising, and subsequent quality.

Development of a standard method of rating refrigerator cars that would allow

railroads to specify and manufacturers to measure the ability of a refrigerated railroad car to maintain required inside temperatures was also suggested. Such a system has been recently developed and adopted by the trucking industry for motortruck trailers.

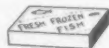
The committee also recommended development of portable refrigerated cargo boxes for transporting frozen foods by highway, rail, sea, and air, thus reducing costs of transportation through



the reduction of multiple handling of packages.

Research on the traffic-flow of trucks not regulated by the Interstate Commerce Commission that are carrying food from farms to marketplace should be expedited, according to the committee. Information is lacking on the exact scope and extent of this important movement of food in unregulated trucks.

Other important transportation research needs the committee listed are: (1) development of improved methods of loading perishable commodities on railway cars and trucks so as to reduce bruising and spoiling; (2) studies to improve protection of food against insect damage during transportation.



## Tuna

### ALBACORE TAGGED OFF CALIFORNIA RECAPTURED BY JAPANESE:

An albacore tagged and released off San Francisco, Calif., by biologists of the Honolulu Biological Laboratory, U. S. Bureau of Commercial Fisheries, was recaptured by Japanese tuna long-line fishermen about 1,000 miles SE. of Tokyo Bay, in the vicinity of Marcus Island. This fish was tagged by the Bureau's research vessel *Charles H. Gilbert* on November 15, 1956, and was recaptured by the long-line vessel, *No. 2 Hayatori Maru* of Iwate Prefecture, Japan, on March 13, 1960, after a period of 3 years and 4 months. This is the longest period thus far observed between tagging and recapture of an albacore.

This recapture marked the 17th recovery of albacore tagged by the Honolulu Biological Laboratory. Other recoveries in the past have also demonstrated considerable trans-Pacific

movements extending from the United States west coast to the vicinity of Tokyo Bay, indicating that there is probably a single population of this valuable tuna species in the North Pacific.

According to the Director of the Laboratory, much valuable information is obtained whenever there is a tag recovery. "Not only do we learn about migratory movements, but also about albacore age and growth. Although scientists tag the fish, we are dependent upon fishermen for the recoveries. This is an excellent example of the cooperation between fishermen and scientists, who are both interested in learning more about albacore," he said.



## United States Fishing Fleet<sup>1/</sup> Additions

### MARCH 1960:

A total of 24 vessels of 5 net tons and over were issued first documents as fishing craft during March 1960--a de-

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, March 1960

Area	March		Jan.-Mar.		Total
	1960	1959	1960	1959	
	(Number)				
New England	1	3	3	5	15
Middle Atlantic	1	3	5	3	12
Chesapeake	-	8	9	21	106
South Atlantic	4	6	14	18	76
Gulf	6	9	13	25	135
Pacific	9	-	18	8	97
Great Lakes	2	-	3	3	6
Alaska	1	-	1	2	32
Total	24	29	66	85	479

Note: Vessels assigned to the various areas on the basis of their home ports.

crease of 5 vessels as compared with the same month in 1959. The Pacific area led with 9 vessels, followed by the Gulf area with 6, the South Atlantic with 4, and the Great Lakes with 2 vessels. The New England, Middle Atlantic, and Alaska areas accounted for the remaining 3 vessels.

During the first three months of 1960, a total of 66 vessels were issued first documents as fishing craft--19 less than were reported during the same period of last year. Most of this decline occurred in the Chesapeake and Gulf areas, each of which showed a drop of 12 vessels compared with the 1959 three-months period.

<sup>1/</sup>Includes both commercial and sport fishing craft.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft By Tonnage, March 1960

Net Tons	Number
5 to 9	8
10 to 19	9
20 to 29	4
30 to 39	2
40 to 49	1
Total	24



## U. S. Foreign Trade

### EDIBLE FISHERY PRODUCTS, FEBRUARY 1960:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during February 1960 decreased by 23.1 percent in quantity and

17.3 percent in value as compared with January 1960. The decrease was due primarily to lower imports of frozen albacore and other tuna (down 9.8 million pounds), and to a lesser degree, a decrease in the imports of canned tuna in

United States Imports and Exports of Edible Fishery Products, February 1960 with Comparisons

Item	QUANTITY		VALUE		
	February 1960	Year 1959	February 1960	Year 1959	Year 1959
	(Millions of Lbs.)		(Millions of \$)		
Imports:					
Fish & shellfish:					
Fresh, frozen, & processed <sup>1/</sup>	62.8	72.8	1,070.5	20.5	21.3
Exports:					
Fish & shellfish:					
Processed only <sup>1/</sup> (excluding fresh & frozen)	5.3	3.3	68.0	1.3	1.0
					22.8

<sup>1/</sup>Includes pastes, sauces, clam chowder and juice, and other specialties.

brine (down 2.6 million pounds), canned salmon (down 2.2 million pounds), and frozen shrimp (down 1.1 million pounds). The decrease was partly offset by increases of less than 1 million pounds in the imports of groundfish fillets, fresh and frozen salmon, and canned sardines in oil.

Compared with February 1959, the imports in February this year were down 13.7 percent in quantity and 3.8 percent in value due to lower imports of frozen tuna other than albacore (down 10.5 million pounds), and canned tuna in brine (down 1.4 million pounds). Compensating, in part, for the decreases was an increase of about 2.6 million pounds in the imports of groundfish fillets and fresh and frozen lobsters (up 0.9 million pounds).

United States exports of processed fish and shellfish in February 1960 were lower by 19.7 percent in quantity and 27.8 percent in value as compared with January 1960. Compared with the same month in 1959, the exports this February were higher by 59.1 percent in quantity and 30.0 percent in value.

\* \* \* \* \*

### FISH MEAL AND SCRAP IMPORTS, 1940, 1950, 1955-59:

Imports of fish meal and scrap into the United States during 1959 amounted to 132,955 short tons--an increase of 32,603 tons or 32.5 percent as compared

U. S. Imports of Fish Meal and Scrap, 1940, 1950, 1955-59						
Country of Origin	1959	1958	1957	1956	1955	1950
						1940
				(Short Tons)		
Canada . . . . .	39,063	27,777	42,823	57,127	41,661	42,499
Peru . . . . .	49,923	33,371	16,817	8,756	8,734	3,917
Chile . . . . .	5,104	8,160	1,108	-	-	377
Angola . . . . .	20,738	18,062	9,708	5,063	12,138	6,503
Union of South Africa . . . . .	9,727	7,345	4,015	3,470	3,545	-
Norway . . . . .	141	1,184	2,930	10,965	14,568	2,903
Other countries . . . . .	8,259	4,453	3,795	6,030	17,357	7,656
Total	132,955	100,352	81,196	91,411	98,003	63,855
1/ Japan, 18,162 tons.						46,133

with 1958. Imports from Peru amounted to 49,923 tons and accounted for 37.5 percent of the total imports for 1959. Canada followed with 39,063 tons or 29.4 percent of the total--11,286 tons higher than the previous year.

\*\*\*\*\*

#### U. S. IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1960 at the 12½-percent rate of duty is 53,443,330 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports from January 1-April 2, 1960, amounted to 8,581,279 pounds, according to data compiled by the Bureau of Customs. From January 1-April 4, 1959, a total of 11,308,844 pounds had been imported.



#### U. S. Production of Fish Sticks and Portions, January-March 1960

The United States production of fish sticks during the first quarter of 1960

Table 1 - U. S. Production of Fish Sticks by Months, and Type, January-March 1960 <sup>1/</sup>			
Month	Cooked	Raw	Total
			(1,000 Lbs.)
January . . . . .	5,185	312	5,496
February . . . . .	6,168	360	6,528
March . . . . .	7,245	585	7,830
Total . . . . .	18,597	1,257	19,854
1/ Preliminary.			

amounted to 19.9 million pounds, while the production of fish portions totaled

11.7 million pounds. This was a gain of 1.7 million pounds (9 percent) in fish sticks and 2.8 million pounds (31 percent) in fish portions as compared with the same quarter of the previous year.

Cooked fish sticks (18.6 million pounds)

Table 2 - U. S. Production of Fish Sticks by Areas, January-March 1959 and 1960			
Area	1960 <sup>1/</sup>	1959 <sup>2/</sup>	
	No. of Firms	No. of Firms	(1,000 Lbs.)
Atlantic Coast States . .	23	16,388	24
Interior and Gulf States .	5	1,532	5
Pacific Coast States . .	7	1,934	10
Total . . . . .	35	19,854	39
1/ Preliminary.			
2/ Revised.			

comprised 94 percent of the total fish stick production, while the remaining 1.3

Table 3 - U. S. Production of Fish Sticks by Months, 1956-1960					
Month	1960 <sup>1/</sup>	1959 <sup>2/</sup>	1958 <sup>2/</sup>	1957	1956
			(1,000 Lbs.)		
January . . . . .	5,496	6,265	5,471	4,261	4,862
February . . . . .	6,528	6,340	5,925	5,246	5,323
March . . . . .	7,830	5,594	5,526	5,147	6,082
April . . . . .	-	4,708	4,855	4,492	3,771
May . . . . .	-	4,398	4,229	3,380	3,873
June . . . . .	-	4,575	4,702	3,522	3,580
July . . . . .	-	3,783	4,574	3,821	3,153
August . . . . .	-	3,872	4,358	4,643	4,166
September . . . . .	-	5,343	5,328	4,861	4,085
October . . . . .	-	5,831	5,485	5,162	5,063
November . . . . .	-	4,822	5,091	4,579	4,585
December . . . . .	-	4,734	5,467	4,014	4,019
Total . . . . .	-	60,265	61,011	53,128	52,562
1/ Preliminary.					
2/ Revised.					

million pounds (6 percent) consisted of raw fish sticks. A total of 11.3 million

Table 4 - U. S. Production of Fish Portions by Months and Type, January-March, 1960 <sup>1/</sup>				
Month	Breaded			Unbreaded
	Cooked	Raw	Total	
			(1,000 Lbs.)	
January . . . . .	466	3,040	3,506	117
February . . . . .	549	2,786	3,335	119
March . . . . .	874	3,589	4,463	156
Total . . . . .	1,889	9,415	11,304	392
1/ Preliminary.				

pounds of breaded fish portions (of which 9.4 million pounds were raw) and nearly 0.4 million pounds of unbreaded portions was processed during the first quarter of 1960.

The Atlantic Coast was the principal area in the production of both fish sticks

Table 5 - U. S. Production of Fish Portions by Areas, January-March 1959 and 1960

Area	1960 <sup>1/</sup>		1959 <sup>2/</sup>	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States . .	21	6,839	19	5,405
Interior, Gulf, and Pacific Coast States . .	12	4,857	9	3,537
Total . . . . .	33	11,696	28	8,942

<sup>1/</sup> Preliminary.

<sup>2/</sup> Revised.

and portions with 16.4 million and 6.8 million pounds, respectively. The remaining 3.5 million pounds of fish

Table 6 - U. S. Production of Fish Portions by Months, 1958-1960

Month	1960 <sup>1/</sup>		1959 <sup>2/</sup>		1958
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.	
January . . . . .	3,623	2,692	3,623	2,692	1,973
February . . . . .	3,454	3,025	3,454	3,025	1,254
March . . . . .	4,619	3,225	4,619	3,225	1,471
April . . . . .	-	2,634	-	2,634	2,268
May . . . . .	-	2,684	-	2,684	1,478
June . . . . .	-	3,247	-	3,247	1,504
July . . . . .	-	2,227	-	2,227	2,161
August . . . . .	-	2,796	-	2,796	1,516
September . . . . .	-	3,558	-	3,558	1,566
October . . . . .	-	4,314	-	4,314	2,560
November . . . . .	-	3,483	-	3,483	1,979
December . . . . .	-	3,262	-	3,262	2,060
Total . . . . .	-	37,147	-	37,147	21,790

<sup>1/</sup> Preliminary.

<sup>2/</sup> Revised.

sticks and 4.9 million pounds of fish portions were packed in inland, Gulf, and Pacific Coast States.

Notes: See *Commercial Fisheries Review*, March 1960 p. 33.



## Wholesale Prices, April 1960

The April 1960 wholesale price index for edible fishery products (fresh, frozen, and canned) at 123.3 of the 1947-49 average was about unchanged from the preceding month. Price changes from March to April were sharp for some items, but the changes up or down just about counterbalanced each other. From April a year ago to this April the overall wholesale fishery products price index increased by about 0.5 percent, due primarily to higher canned fish and shucked oyster prices.

Haddock landings at New England ports were about at an annual peak this April and contributed to another sharp drop (48.0 percent) in the mid-month price for fresh large drawn haddock. Higher wholesale prices for the other six items in the drawn, dressed, and whole finfish subgroup failed to offset the lower haddock price and the subgroup index dropped 2.8 percent from March to April this year. The Jewish holidays resulted in some sharp increases in wholesale prices for fresh-water fish from March to April 1960. The drawn,

dressed, or whole finfish subgroup index for April this year as compared with the same month a year ago was up 1.7 percent. Mid-April 1960 large haddock prices were down about 20 percent and frozen dressed halibut prices were down 8.1 percent as compared with the same month a year ago. These



South side of Boston fish pier with otter trawlers tied up at the dock. Note loaded fish carts and rear entrances to the wholesaler dealers' stores.

sharp declines were more than offset by a 40.8-percent increase in fresh yellow pike prices and a 4.6-percent increase in frozen dressed salmon prices.

Fresh processed fish and shellfish in April 1960 declined 3.6 percent from the preceding month due primarily to a 20.3-percent drop in fresh haddock fillet prices. In addition, both fresh shrimp and shucked oyster prices were down slightly. From April a year ago to this April the processed fresh fish and shellfish subgroup wholesale price index was higher by a fraction of one percent. Higher shucked oyster prices (up 15.2 percent) more than compensated for a drop of 10.3 percent in fresh shrimp prices and a decline of 3.5 percent in fresh haddock fillet prices.

The wholesale price index for processed frozen fish and shellfish in April this year was higher than the preceding month by 6.5 percent because of an increase in the wholesale price for frozen shrimp at Chicago. The sharp jump of about 11 cents a pound from mid-March to mid-April reflected the rapid decline in frozen shrimp inventories and a shortage in some of the larger sizes. In April 1960, the drop of 5.3 percent in the frozen haddock fillet price continued to reflect the weak market for this product which has been apparent for several months. The processed frozen fish and shellfish subgroup index this April as compared with April a year ago dropped 9.4 percent. All subgroup items were lower in April this year as compared with April a year ago. Frozen shrimp prices, although much firmer in April this year, were still 7.9 percent below April 1959 prices. During the same period frozen haddock fillet prices declined by 23.9 percent, frozen flounder fillets were lower by 3.8 percent, and frozen ocean perch fillets were down 1.7 percent.

The primary wholesale price index for canned fish products in April this year increased 1.0 percent from the preceding month due to the first increase in canned light meat tuna prices in almost a year. As of mid-April this year canned tuna inventories were in a healthy condition and supplies of raw tuna for canning were lower than for the same period of 1959. Compared with April 1959, primary wholesale prices for canned fish this April were higher by 5.9 percent. Prices for all canned fish items in the subgroup were higher in April this year from April a year ago. The fishing season for Maine sardines opened on April 15, but stocks of canning size herring were not expected to be available before late May or early June. Stocks of canned tuna in April 1960 were still good and Maine sardine stocks were about sufficient to last until the new season gets under way. Supplies of canned California sardines in 15-oz. cans and all packs of canned salmon were down practically to zero in April this year.



Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1960 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1947-49=100)			
			Apr. 1960	Mar. 1960	Apr. 1960	Mar. 1960	Feb. 1960	Apr. 1959
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					123.3	123.4	121.8	122.7
<b>Fresh &amp; Frozen Fishery Products:</b>					136.7	137.6	134.9	139.6
Drawn, Dressed, or Whole Finfish:					144.3	148.5	147.2	141.9
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.06	.12	60.8	116.9	120.9	76.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.30	.29	92.8	90.3	90.3	102.1
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.80	.78	179.2	174.7	172.5	171.9
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.98	.79	241.7	195.8	185.9	241.7
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	1.05	.72	212.5	144.7	136.6	217.4
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	1.00	.78	234.5	181.8	170.0	166.5
<b>Processed, Fresh (Fish &amp; Shellfish):</b>					137.1	142.2	134.5	136.5
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.28	.35	93.6	117.4	139.5	97.0
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.78	.81	123.2	127.2	112.2	137.4
Oysters, shucked, standards	Norfolk	gal.	6.63	6.75	164.0	167.0	163.9	142.3
<b>Processed, Frozen (Fish &amp; Shellfish):</b>					116.2	109.1	110.2	128.3
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.38	.38	99.5	98.1	98.1	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.27	.29	84.8	89.5	97.3	111.4
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	116.8	114.8	110.8	118.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.77	.68	118.0	104.5	104.1	128.1
<b>Canned Fishery Products:</b>					104.8	103.8	103.8	99.0
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.50	24.50	127.8	127.8	127.8	117.4
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.10	10.80	80.0	77.9	77.9	79.3
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	8.00	8.00	93.9	93.9	93.9	82.2
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	93.1	87.5

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.



### ECOLOGY OF SHRIMP STUDIED

Research on a typical nursery area is being continued by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries. This work shows promise of defining the complex ecology of the shrimp nursery grounds and will show when the brown and white shrimp larvae arrive from the sea and then depart to the offshore waters as the season progresses. The Laboratory staff will try to determine the physiology, tolerance, and response of shrimp to various conditions and their nutritional requirements.



## International

### FOOD AND AGRICULTURE ORGANIZATION

#### EUROPEAN NATIONS TO DISCUSS INLAND FISHERIES:

An organization designed for discussion and combined action on common problems of European inland fisheries held its first meeting April 25-30, 1960, at Dublin, Ireland. Among the problems are prevention of water pollution, control of aquatic weeds and fertilization of fish ponds, and removal of predatory fish. The new group is known as the European Inland Fisheries Advisory Commission (EIFAC) and is sponsored by the Food and Agriculture Organization (FAO).

All European members of FAO had been invited to the meeting as participants or as observers, and 14 countries had already signified their desire to become commission members. Five international organizations, involved in work related to fisheries, had been invited to attend as observers.

The new commission resulted from a meeting of an intergovernmental group of inland fisheries experts in Helsinki, Finland, in 1956. This group recommended that FAO establish an organization to meet the specific needs of European inland fisheries services.

"Although European fish culture has already reached a high degree of development," said the Chief of the Inland Resources Section, Fisheries Division, FAO, "the pooling of research methods and techniques should increase food production far beyond that achieved by traditional means."

At its first meeting the Commission was expected to establish its rules of procedure and to set up its internal structure.

### LAW OF THE SEA

#### DEVELOPMENTS AT GENEVA CONFERENCE:

April 6-11: The Second Law of the Sea Conference sponsored by the United Nations convened at Geneva on March 17, 1960, with representatives of 87 nations on hand to arrive at some understanding on the territorial sea and fishing rights. It appears that there are many nations anxious to reach some kind of agreement.

Although representatives of various nations were still scheduled to make speeches on the various "positions" of their respective countries, as of April 6 four principal proposals had been made in the Committee of the Whole:

- (1) **U.S.S.R.:** Territorial sea up to 12 miles; if less than 12 miles territorial sea is chosen by a nation, the balance up to 12 is exclusive fishing zone for the coastal state. Means a fishing limit of 12 miles for the coastal state.
- (2) **Mexico:** (a) Territorial sea from 3 to 6 miles; exclusive fishing zone up to a limit of 18 miles. (b) Territorial sea 7 to 9 miles; exclusive fishing zone up to a limit of 15 miles.
- (3) **United States:** Territorial sea 6 miles; historic fishing between 6 and 12 miles may be continued, for same groups of species, based on five-year average.
- (4) **Canada:** Territorial sea 6 miles; exclusive fishing zone between 6 and 12 miles.

Ghana on April 4 made an attempt to resolve a deadlock in the Conference by offering a compromise between United States and Canadian proposals on offshore fishing limits. Although some United States delegates regarded the proposal as "perhaps the best the United States can get," others insisted that the United States should attempt to obtain a phase out of historic fishing rights. A time limit on withdrawal of fishing operations beyond the historic three-mile limit would result if the Ghana proposal prevails. The Ghana spokesman pointed out: "Complete exclusion of foreign fishermen could cause human and economic hardships. However, the United States proposal for fishing rights in perpetuity is defective."

"There should be a limit in point of time—a period of readjustment to allow foreign fishermen time to find other fishing grounds or make adjustments in their economy. It also would give coastal states time to develop their fishing potential for maximum sustainable yield."

On April 4 the Chairman of the United States delegation at the Conference indicated that the United States has no choice but to show some flexibility on fishing rights. On April 5 the Chairman confirmed reports that a high-level meeting was planned by the Canadian and United States delegations at the Conference to work out a joint proposal to offer the Conference.

The Ceylon spokesman on April 5 suggested modification of the Canadian proposal to cover later bilateral agreements with the United States. This, in effect, would put Canada on record to give ground on historic fishing rights.

On April 6 it was reported that the principal Western maritime nations had worked out a compromise on fishing rights. The compromise will be between the proposals of the United States and Canada for a six-mile territorial sea, with a contiguous six-mile fishing zone. Canada advocated the exclusion of foreign trawlers while the United States reserved

## International (Contd.):

limited rights for foreign fishermen who regularly fished the waters concerned. The compromise proposes that coastal states receive exclusive fishing rights in a six-mile zone adjoining their territorial sea after a ten-year waiting period. The United Kingdom also is reported to support this compromise.

**April 12-22:** On the first day of voting at the Conference, April 13, 1960, the joint United States-Canadian compromise proposal received a plurality of the votes cast in the Committee of the Whole, 43 to 33, with 12 abstentions. This fell short of the two-thirds majority required for final adoption. The abstaining countries were Argentina, Belgium, Cambodia, Cuba, Finland, France, Ghana, Guatemala, Holy See, India, Philippines, and Sweden. It was expected that a number of these countries would later switch their votes in favor of the joint proposal.

Mexico and Venezuela joined the 16 Afro-Asian nations in a revised proposal, in favor of which the Soviet proposal was finally withdrawn. The revised Afro-Asian proposal was narrowly beaten, 36 to 39, with 13 abstentions. As of April 13, therefore, only the joint United States-Canadian proposal and an Icelandic proposal were approved by the Committee and referred to the plenary. More than half the Conference abstained from voting on the Icelandic proposal.

The 12-mile Russian-backed proposal was defeated in the Committee of the Whole, where it secured 44 percent of the total votes. There was therefore reason to hope that a number of countries would then be able to change their votes in favor of the joint United States-Canadian proposal so that in the plenary session it would gain the 59 votes required if all delegations were present and voting. If there were abstentions, correspondingly fewer votes would be required. The plenary was scheduled to convene on April 19.

On April 8, Ambassador Dean addressed the Conference in behalf of the joint United States-Canadian compromise proposal. He stated that it clearly would satisfy both the needs and future aspirations of coastal states, while at the same time it would protect foreign fishing interests from unnecessary or precipitate injury; therefore, he asserted, it is the only proposal acceptable to enough nations for adoption by the Conference. He emphasized the two concessions which the United States is making—placing a time limitation on foreign fishing rights, and making the limit 10 years; the proposal thus goes more than halfway to meet the objections of other countries. He thanked individually the many delegates who had given him cooperation and understanding, and he reiterated that the unusual situations of certain other countries that are overwhelmingly dependent upon their fisheries within the 12-mile zone must be given careful and sympathetic consideration. The many complex and varying problems of basic fishing rights in the fisheries zone will need, he continued, to be implemented by bilateral or multilateral arrangements consistent with the basic principles now established, so that the principles may be applied in an orderly and practical manner. With this proposal an important new principle concerning fishing jurisdiction is to be embodied in international law. Finally, Ambassador Dean took advantage of the occasion to note that the Four Conventions and Optional Protocol which had been approved at the 1958 Conference had just been favorably reported to the United States Senate; this, he hoped, augured well for the success of the present Conference.

The first of several proposals to be submitted at Geneva during the fourth week of the Conference was put forward by Iceland on April 7, and revised on April 12. The revision provides that where a people is overwhelmingly dependent upon its coastal fisheries for its livelihood or economic development and it becomes necessary to limit the total catch in areas adjacent to the coastal fisheries zone, the nation shall have preferential rights under such limitations to the extent rendered necessary by its dependence on fishery. On April 13, the Committee of the Whole approved it for further action by a vote of 31 to 11, with 46 abstentions.

A revised version of the 16-nation Afro-Asian proposal, previously mentioned, was presented on April 10 by the original sponsors, now increased to 18 by the addition of Mexico and Venezuela. The revision provided that every country should enact the laws and regulations necessary to prevent its nationals from fishing in the territorial seas and fishery zones of other countries unless especially authorized to do so. It was voted down on April 13, as above.

The Philippine amendment, previously mentioned, had been withdrawn on April 12. On April 13, the Cuban delegate proposed an additional protocol to the Convention on Fishing and Conservation of the Living Resources of the High Seas whereby a coastal state might unilaterally limit the catch in special circumstances. Argentina on April 11 and Guatemala on April 12 submitted amendments to the United States-Canadian compromise proposal, but they were voted down on April 13. Thereupon the Guatemalan delegate proposed to have the United States-Canadian measure voted on, paragraph by paragraph. Ambassador Dean made it quite clear, however, that the joint proposal was an integrated whole, and must be so voted on. This Guatemalan proposal was also defeated. Peru offered a resolution which provided that a country might, in an exceptional situation and in certain conditions, establish unilaterally the extent of the area of its jurisdiction in which it would apply fishery-conservation and control measures.

The 88-nation Law of the Sea Conference decided on April 20 to put off until April 26 the final voting on the twin issues of the width of the territorial sea and fishing rights. The five-week-old Conference, as of April 20, was scheduled to finish its work by April 22, but the lack of speakers has delayed final action in the plenary sessions which began April 19. The only formal proposal before the Conference as of April 20 was the joint United States-Canadian plan for a six-mile limit for the territorial sea coupled with a further six-mile fishing limit for the coastal state. All foreign fishing vessels would be barred from fishing within 12 miles of the territorial waters of a coastal state beginning in 1970.

On April 22 Sweden told the Conference that it would vote for the United States-Canadian proposal the week of April 24. The delegate from Sweden told the Conference he previously abstained from voting for the United States-Canadian proposal because Sweden is opposed to the idea of exclusive coastal fishing rights beyond the territorial sea. But he said Sweden would support the proposal "to help the Conference to arrive at a positive result and prevent anarchy along the world's coasts."

## WHALING

## ANTARCTIC SPERM WHALE OIL PRODUCTION LOWER FOR 1959/60 SEASON:

Sperm whaling prior to the December 28, 1959, opening of the regular 1959/60 Antarctic season yielded 18,414 short tons of oil, excluding production of the Soviet Union for which no data are available. Comparable production last season was 34,563 tons, nearly twice as much.

Whaling expeditions normally arrive in the Antarctic prior to the opening of the regular season set by the International Whaling Convention and conduct sperm whaling operations until the regular season opens. Sperm whaling, not controlled by the Convention, virtually ceases when the season opens.

Antarctic Sperm Whale Oil Production, 1958/59 and 1959/60		
Country	1959/60	1958/59
	(Short Tons)	
Norway (8 expeditions, 9 last season) . . .	5,842	10,341
Japan (6 expeditions) . . . . .	11,480	17,889
United Kingdom (3 expeditions) . . . . .	1,092	4,761
Netherlands (1 expedition) . . . . .	0	1,571
Total . . . . .	18,414	34,562

## International (Contd.):

Sperm oil production in the Antarctic usually accounts for 40 to 50 percent of the annual world production and most of the variation in total world production. Sperm oil output outside the Antarctic has increased slightly in recent years, the U. S. Department of Agriculture reported in its March 28, 1960, issue of Foreign Crops and Markets.

\* \* \* \* \*

### ANTARCTIC WHALE OIL PRODUCTION LOWER FOR 1959/60 SEASON:

According to information from the International Association of Whaling Companies, Sandefjord, Norway, all countries participating in the Antarctic 1959/60 whaling season had ceased operations by April 7, 1960, with the exception of the Netherlands expedition. The catch in terms of blue-whale units amounted to 15,437 units. This amount exceeds the over-all catch quota in effect during the 1958/59 season, but was well below the predicted catch of 17,000-18,000 units. The quota established by the International Whaling Commission for the current season was inoperative because both Norway and the Netherlands were operating outside of the convention for the first time.

1957/58. (United States Embassy in Oslo, April 12, 1960.)



### British Honduras

#### FISHERY PRODUCTS EXPORTS, 1958-59:

British Honduras exports of fishery products during 1959 totaled 523,249 pounds, valued at US\$187,607, as compared with a total of 352,196 pounds, valued at US\$153,698, in 1958.

British Honduras Exports of Fishery Products, 1958/59 (Total Exports & Exports to United States)					
Product	1959		1958		
	Quantity Lbs.	Value US\$	Quantity Lbs.	Value US\$	
Fresh, frozen, or live fish:					
Total exports . . . . .	60,479	12,737	53,377	6,701	
Exports to U. S. . . . .	49,680	9,482	26,608	3,784	
Salted, dried fish, etc.:					
Total exports . . . . .	32,638	3,102	58,208	6,108	
Exports to U. S. . . . .	-	-	-	-	
Spiny lobster, whole and tails:					
Total exports . . . . .	398,043	167,685	369,028	157,780	
Exports to U. S. . . . .	368,920	162,411	324,788	149,740	
Tortoise shell:					
Total exports . . . . .	1,507	3,101	896	1,844	
Exports to U. S. . . . .	-	-	-	-	
Unclassified:					
Total exports . . . . .	10,582	892	12,070	1,099	
Exports to U. S. . . . .	400	182	820	194	
Total all fishery products:					
Total exports . . . . .	523,249	187,607	493,379	173,512	
Exports to U. S. . . . .	419,000	172,075	352,196	153,698	

Exports of fish and shellfish to the United States from British Honduras in 1959 accounted for 80.1 percent of the volume and 91.7 percent of the value.

### Antarctic Whale Oil Production<sup>1/</sup>, 1957/58-1959/60

Country	Catch	Oil Production			
	1959/60	1959/60	1959/60	1958/59	1957/58
	Blue-Whale				
	Units	Bbbs.	. . . . (1,000 Short Tons) . . . .		
Norway . . . . .	4,565	588,450	110	148	153
United Kingdom . . .	1,898	234,420	44	46	60
Japan . . . . .	5,217	551,265	103	115	109
Netherlands . . . . .	2/ 968	2/ 125,452	23	24	21
U. S. S. R. . . . .	2,789	NA	NA	NA	NA
Total . . . . .	15,437	3/ 1,499,587	3/ 280	3/ 333	3/ 343

<sup>1/</sup>Preliminary data.

<sup>2/</sup>Netherlands still operating after the Whaling Commission closing date of April 7. Data for Netherlands are as of March 26.

<sup>3/</sup>Exclusive of U. S. S. R. production.

NA - not available.

Preliminary statistics for 1959/60 indicate whale oil production of 280,000 short tons, a drop of about 15.9 percent from the 333,000 tons produced in the 1958/59 season and a drop of 18.4 percent from the 343,000 tons produced in

There was an increase of 19.0 percent in volume and 12.0 percent in value as compared with 1958.



## Canada

### BIOLOGISTS SURVEY ARCTIC FISHERY RESOURCES:

With the development of fishery projects in the Canadian Arctic area becoming more concentrated in recent years, fishery biologists are increasing their efforts to discover basic yet vital information on fish stocks of the many water systems throughout that vast area. For countless generations, Eskimos have fished those lakes on a subsistence basis, supplementing their hunting excursions in search of food. In recent years both commercial and sports fishing enterprises have been established in the Canadian north. Science has benefited fishing operations in other parts of Canada, and a project conducted in 1959 by the Arctic Unit of the Fisheries Research Board of Canada will undoubtedly be of great value to Federal fishery officials, the Department of Northern Affairs and National Resources, and those concerned with fishing operations in the Arctic.

The Arctic Unit, which is based in Montreal, has made a survey of fish stocks of the Mackenzie and Keewatin Districts. This survey covered some 21 lakes extending east from Great Bear Lake to the northwest coast of Hudson Bay. The unit's base of operations was located at Yellowknife, Northwest Territories. From that base 4 field parties were transported by air to spend nearly 2 weeks on each lake. The lakes were carefully selected to represent many watersheds including those drained by the Coppermine, Back, Thelon, and Dubawnt Rivers.

The biologists amassed a prodigious amount of data during their investigations in the "land of the midnight sun," and considerable time will be required before a complete analysis can be made.

The common whitefish and lake trout were the dominant species in all water areas studied, followed by round whitefish, pike, cisco, and grayling. The distribution of arctic char was limited to waters draining directly into the Arctic Ocean.

The Research Board made special arrangements with the Institute of Fisheries of the University of British Columbia, and with the Division of Fishes of the Royal Ontario Museum, for the participation in the survey of senior biologists from those institutions. Both the University and the Museum are now identifying the fish taken from the area during the survey.

In addition to information gathered on the fish of the area, the biologists collected a variety of associated material for other organizations and specialists in the many different fields of biology. (Canadian Trade News, January 1960.)



## Costa Rica

### FISHERIES TRENDS, APRIL 1960:

A meeting was held at Puntarenas, Costa Rica, on April 3, 1960, between officials of the Chamber of Fishermen of Puntarenas, the Minister of Economy and Finance, and other government and banking officials.

The Chamber made known the economic difficulties which the fishing industry has been encountering owing to a lack of financial support from Costa Rican sectors. They reported that their operations heretofore have been financed almost exclusively by United States investors who, according to a press report, "have reaped fabulous profits at the expense of Costa Rican fishermen."

The possibility of establishing a fishmeal plant on a cooperative basis, and eventually a fish canning operation, was discussed.

The Minister of Economy and Finance offered a concession in the form of an increase in the proportion (from 65 to 99 percent) of the foreign exchange that could be authorized from fish products exports, at the legal free rate (CR\$1.00 equals US\$0.1504). It was also proposed to facilitate the granting of bank loans to the fishermen. For this purpose, the utilization of some CR\$2,000,000



## Costa Rica (Contd.):

(US\$300,800 at free rate) from a pending bank loan might be considered.

Another matter discussed at the meeting which appears significant, in view of the United States Export Promotion Program, was the possibility of purchasing a large shrimp boat, at a cost of approximately US\$75,000 which could be operated on a cooperative basis. (United States Embassy in San Jose, April 5, 1960.)

\* \* \* \* \*

SHRIMP INDUSTRY TRENDS, 1959:

Costa Rica's shrimp landings in 1959, were 1,356,300 pounds (1,095,700 pounds of large and 260,600 pounds of small shrimp). These data appeared in an article in La Nacion of March 23, 1960. The newspaper reported that the Fish and Wildlife Section of the Ministry of Agriculture had completed a thorough statistical study of the production of fish and shrimp at Limon and Puntarenas.

It had been estimated that in a good year production could reach 1,500,000 pounds. Shrimp landings in 1959 were the highest in Costa Rica's history. In 1958, landings were only 930,000 pounds.

As of March 1960 there were 43 motorized fishing vessels at Puntarenas engaged exclusively in the fishing of shrimp, representing an investment in excess of CR\$6 million (US\$905,000). As a part of this industry there also are three refrigeration plants and two packing houses which represent a financial investment in excess of CR\$2 million (US\$302,000). The fishing industry of Costa Rica maintains no less than 600 families whose chief source of income is derived from fishing for shrimp or from the shrimp-processing plants. (Report of March 23 of United States Embassy, San Jose.)

Notes: (1) Values converted at rate of CR\$6.63 equals US\$1.

(2) Also see Commercial Fisheries Review, March 1960, p. 44.



## Cuba

FISHERIES TRENDS, MARCH 1960:

During the eighth meeting in Havana of the National Institute for Agrarian Reform held in March 1960, the Executive Director reported on "the achievements" of the organization for the ten months of its operation. In the field of fisheries he reported the following: 38 fishing and 6 frog cooperatives have been formed; 6 dockyards have been constructed, of which 5 are in full operation; 6 packing and freezing plants are controlled by the Institute; and it operates a cannery which has been taken over from the Ministry of Misapplied Goods.

The Department of Fisheries now controls the prices and the distribution of fish, including exports of frozen fish. (United States Embassy in Habana, March 21, 1960.)

\* \* \* \* \*

CLOSED SEASON ON SHRIMP TRAWLING AND SEVERAL SPECIES OF FISH:

The Cuban Instituto Nacional de la Pesca (INP) by a Resolution published in the Official Gazette No. 63 of March 31, 1960, imposed a closed season on the capture of the species *biajaca* (triple tail), *joturo*, *dajao* and *mojarra* (perch), effective during the period April 10 through July 1, 1960, inclusive.

The INP, in the same Official Gazette, issued another Resolution which prohibited April 1-30, 1960, the capture of shrimp by trawl nets in that portion of the southern shelf east of meridian 77°24' west longitude, which passes through the Santa Clara Shoal. Previously the capture of shrimp by trawl nets had been prohibited in the southern shelf east of meridian 77°24' west longitude, which passes through the extreme eastern portion of the Chinchorro Shoal.

Previously on March 23, a circular (No. 89) was issued by the Cuban Customs Office which announced that the Fisheries Division of the INRA (Agrarian Reform Institute) declared a closed season on the capture of sea shrimp ("camaron de mar") April 1 to April 30, 1960, both dates inclusive.

## Cuba (Contd.):

Five days after the closed season became effective, it was forbidden to transport, sell, or store live or frozen shrimp. (United States Embassy in Habana, April 6, 1960.)



## Denmark

### HERRING MEAL EXPORTS THREATENED:

Denmark's export of herring and other fish meals is in serious jeopardy because of lower-price, higher-quality fish meals coming from Peru, states a Danish newspaper *Kristelig Dagblad* (Independent Daily). The paper cites the Ministry of Fisheries as saying that Peru has driven Denmark completely out of the United States and French markets, and that sales to the United Kingdom have been reduced by 50 percent, all since the beginning of 1960. (United States Embassy in Copenhagen, April 1, 1960.)



## Ecuador

### EXCHANGE REGULATIONS MODERATED ON SHRIMP EXPORTS:

The Ecuadoran Monetary Board Resolution 352 eased existing exchange regulations on shrimp exports with a view to promoting exports. Shrimp exporters now are required to turn in only the first US\$100 per metric ton of the f.o.b. price received to the Central Bank at the official rate (Sucres 15 per US\$1.00). Heretofore, shrimp exporters were required to turn in the first US\$300 per metric ton of the f.o.b. price received.

The Board's action reflects not only interest in expanding exports but the country's ability to grant free exchange privileges to exporters in increasing degree. Exports of shrimp have been increasing sharply and were valued at close to US\$4 million f.o.b. in 1959. Ecuador has expressed keen interest in the reported consideration by the United States Congress of restricting foreign

shrimp imports. (U. S. Embassy in Quito, April 8, 1960.)



## French Polynesia

### DEVELOPMENT OF FISHING INDUSTRY UNDER CONSIDERATION:

Fishing, while traditionally important in French Polynesia, is still primarily conducted to supply the local demand for fresh fish. The Government would like to place it on an industrial basis, both in order to augment local food resources and to create an additional export industry. During 1959, an expert from Paris on fishing and fish preservation, conducted a study in the Territory, and his recommendations for the establishment of this industry are due. At present the local population is suspicious of frozen fish, but at the same time likes canned fish. Thus when catches are good, prices in Papeete are very low, but otherwise they tend to be abnormally high and imports of canned fish are required.

As indicated, the Government hopes soon to eliminate the paradox presented by the importation of canned fish into this island territory which abounds with fish. The Administration intends to participate in the establishment of a large-scale fishing industry and the installation of facilities for fish processing and the manufacture of byproducts. (United States Consulate in Suva, March 10, 1960.)



## French West Africa

### TUNA FISHERY:

An important conference on Senegal's tuna fishing and canning industries in Dakar was held in Dakar on January 29-30, 1960. It was attended by several Senegalese Ministers and high officials, delegates from the French government and fishing interests as well as local canners. They discussed the problems pertaining to the development of the tuna resource, 16,000 metric tons of which are expected to be obtained this season. They believe, with some justification, that annual production could reach 50,000

**French West Africa (Contd.):**

tons in a few years, the greater part of which would be exported canned or frozen outside the franc area.

A new tuna cannery built in two months by the Societe des Pecheurs de France began operating on January 30, 1960. It can process 40 tons of fish a day, the United States Consul at Dakar reported on March 7, 1960.

**Honduras****RESTRICTIONS ON SHRIMP FISHING TEMPORARILY SUSPENDED:**

Shrimp fishing operations off the Bay Islands of Honduras came to a virtual halt during the summer months of 1959 when the National Congress approved a fishing law which limited fishing activities by foreigners except for sport, scientific purposes, or personal consumption. In the event the catch is to be used for "exploitation or profit," the law declared that "only resident Hondurans and Honduran corporations, at least 51 percent of whose capital belongs to Honduras, may obtain permits or licenses to fish."

However, the Minister of Natural Resources was subsequently given authority to grant temporary permits, since the Executive Branch hoped that the Congress would reconsider the fishing law and approve a version which would be more favorable for the development of the fishing resources of the country. As of March 28, 1960, the Congress had failed to act, according to a dispatch of the same date from the United States Embassy in Tegucigalpa.

**Iceland****BRITISH FISHING VESSELS LEAVE FISHING BANKS OFF ICELAND:**

On March 14, 1960, all British trawlers and accompanying naval escorts left Iceland's 12-mile fishing waters at the height of an unusually good season. The press estimated that shortly before the withdrawal ordered by the Association of

British Trawler Owners for the Law of the Sea Conference period, 40 to 50 British trawlers were fishing in the waters near Iceland. The press also noted that this was the first time in 80 years that the Icelandic fishing banks were free of British fishing boats.

Since September 1, 1958, when Iceland unilaterally declared jurisdiction over the fisheries out to 12 miles, 273 United Kingdom fishing vessels have been reported fishing inside the 12-mile limit off the Icelandic coast. (Report of March 18 from United States Embassy, Reykjavik.)

\*\*\*\*\*

**COMPETITION FOR FISH STOCKS CAUSES CONCERN:**

The increasing competition for available fish stocks is causing concern in Iceland's fishing industry. The Social Democratic newspaper early in April again reminded its readers that this competition, particularly from the Soviet Union, becomes more serious each day. It cited the Soviet goal of self-sufficiency in fish by 1965. As a means of meeting increasing competition, the newspaper stated, Iceland must guarantee high-quality fish and must seek markets all over the world. (U. S. Embassy report from Reykjavik, April 20, 1960.)

\*\*\*\*\*

**DISAGREEMENT ON EX-VESSEL FISH PRICES:**

The National Federation of Icelandic Fisheries Owners and the Freezing Plants Corporation in mid-March could not agree on ex-vessel prices for fish. This dispute between the fishermen and motor-boat owners is over a higher amount demanded by the fishermen for each kilogram of fish caught than the freezing plants are willing to grant.

On March 21, the vessel owners still unable to reach agreement with the fish-freezing plants on the price of cod and haddock, unilaterally announced an ex-vessel price of 1kr. 2.65 per kilogram (about 3.16 U. S. cents a pound at rate of 38 kronur equal US\$1) for net fish.

The freezing plants had been offering a much lower price which averaged 1kr.

## Iceland (Contd.):

2.20 per kilogram (about 2.63 U. S. cents a pound).

This disagreement over fish prices is something which occurs each year. This season, however, there is added Government determination that wages shall not rise. (March 18 and 24, 1960, reports from the United States Embassy, Reykjavik.)

\*\*\*\*\*

## EVENTS AT LAW OF THE SEA CONFERENCE FOLLOWED CLOSELY:

Interest in the Law of the Sea Conference in Geneva, at which Iceland is represented by a relatively powerful delegation made up of members of all four Althing parties, continued to run high during the latter part of March 1960. The press gave daily front page attention to the proceedings, and continued to reflect unqualified unanimity behind Iceland's position. The newspaper *Morgunblaðið* (Independence Party) probably spoke the national sentiment when it characterized the conference as of "overriding importance insofar as Iceland's economy and independence are concerned." Public support of the Canadian position appeared to be undivided. On the other hand, a *Morgunblaðið* headline declared, "The United States' Proposal Is Still the Most Dangerous One for Iceland." The newspaper *Visir* (Independence Party) stated emphatically that Iceland's future aim must be the whole continental shelf.

\*\*\*\*\*

## FISH FARMING PROJECT PROPOSED:

An Icelandic citizen is planning a fish-farming project to raise principally sea trout (*Salmo trutta trutta*) for export. He has acquired a tract of land on the Snaefells Peninsula (in Western Iceland) adjoining a bay, and by damming up an arm of the bay he expects to create a large fish pond of 20,000 to 25,000 square meters (23,920-29,000 square yards). In one section he plans to hatch the trout eggs in fresh water, and then raise them in the brackish water section. He plans to feed the fish by placing fish waste from fish processing plants in the

water as food for plankton, which in turn would nourish the sea trout. This method of culture has been verified by a Professor in the Fisheries Department, University of Washington, Seattle, who visited Iceland in 1959.

By raising and exporting principally sea trout, the University of Iceland Research Council has estimated that the project could gross Ikr. 3 million (US\$79,000) annually. The Parliament has under consideration an appropriation request for Ikr. 750,000 (US\$20,000) to get this project started. The export of the frozen sea trout to France, other West European markets, and to the United States is planned. The Icelandic citizen has formulated his plans with the Fisheries Department and the Director of the Fresh Water Fisheries. (United States Embassy in Reykjavik, April 7, 1960.)

\*\*\*\*\*

## FISHERY LANDINGS, 1957-59:

Icelandic fishery landings during 1959 were 11.8 percent higher than in 1958 and 29.4 percent higher than during 1957. Cod and ocean perch landings were down, but landings of herring and flounder were up in 1959 as compared with 1958. (*Aegir*, February 15, 1959.)

Icelandic Landings/ by Species, 1957-59			
Species	1959	1958	1957
..... (Metric Tons) .....			
<b>Flounders:</b>			
Plaice . . . . .	875	569	1,320
Lemon sole . . . . .	231	157	1,157
Megrim . . . . .	640	364	143
Witch . . . . .	157	160	100
Dab . . . . .	34	23	1
Halibut . . . . .	1,048	844	914
Skate . . . . .	653	731	209
Cod . . . . .	232,052	235,448	201,160
Haddock . . . . .	18,705	18,753	20,083
Ling . . . . .	2,211	3,304	2,684
Wolffish (catfish) . . . . .	8,745	9,547	8,824
Ocean perch (redfish) . . . . .	99,329	109,920	61,552
Saithe . . . . .	12,008	11,891	14,376
Cusk . . . . .	3,032	4,615	3,386
Herring . . . . .	182,887	107,318	117,495
Other . . . . .	1,800	1,394	2,923
<b>Total . . . . .</b>	<b>564,407</b>	<b>505,038</b>	<b>436,327</b>

1/ Except for herring which are landed round, all fish are landed drawn.

\*\*\*\*\*

## MANPOWER SHORTAGE FELT BY FISHING FLEET:

The Icelandic fishing fleet continues to receive new fishing vessels at a high

**Iceland (Contd.):**

rate. This points up the problem as to whether enough manpower is available in Iceland itself to man the fleet.

Only a few Faroese crew members have gone to Iceland to work, despite the recent lifting of a ban on working on Icelandic vessels by the Faroese Fishermen's Union. The press reported on March 17 that some British and Polish seamen had signed-on to man Icelandic fishing vessels.

Although a trickle of manpower is coming in from the outside, there is no doubt that it will fail to make up for the normal influx of about 800 Faroese seamen which usually takes place in the spring. This was despite reported unemployment in the Faroe Islands and an unusually good spring cod season for the Icelanders. A number of Icelandic trawlers continued to tie-up at the dock, reportedly for lack of crewmen. (March 18 report from the United States Embassy, Reykjavik.)

\*\*\*\*\*

**MARKET FOR HERRING SOUGHT  
IN THE UNITED STATES:**

Approximately 2,000 metric tons of frozen herring from the 1959 catch remain unsold due to failure of Soviet Bloc countries to buy their usual quotas.

This frozen herring, valued at Ikr. 12 million (about US\$315,790), will spoil if it goes unsold; therefore, the owners are making strenuous efforts to sell it in non-Communist countries. The Federation of Cooperative Societies contracted for delivery during April 1960 of 250 tons of frozen herring to West Germany, and the Freezing Plants Corporation recently shipped 45 tons to the United States in an attempt to interest buyers there.

Iceland has been singularly unsuccessful in selling salted herring in the United States during the past two years. The Managing Director of the Herring Production Board left for the United States in April to seek markets for salted herring. This and the Freezing Plants Corporation's winter and April

shipments of frozen herring to the United States indicate renewed efforts to promote Icelandic herring sales outside the Communist Bloc. (United States Embassy in Reykjavik, April 20, 1960.)

\*\*\*\*\*

**MARKETING SURVEY FOR  
CANNED FISH IN UNITED STATES:**

The Icelandic Government's Coordinating Committee for Foreign Aid, the Federation of Icelandic Cooperative Societies (Samband), and the Icelandic Fisheries Association plans for the marketing survey for Icelandic canned products in the United States are completed, according to a March 18, 1960, dispatch from the United States Embassy in Reykjavik.

It is proposed that the services of a United States marketing expert be engaged for a period of two months to collect data on marketing possibilities in the United States for Icelandic canned products (including, but not limited to, herring, seafood products, lamb and lamb stew).

It is hoped that the project will get under way during July 1960, but in any event it must start by September 1960.

\*\*\*\*\*

**TRAWLER OFFICERS'  
DISPUTE SETTLED:**

On March 22, 1960, the officers employed on Icelandic trawlers announced their intention to go on strike March 30 unless prior agreement was reached with the Association of Steam Trawler Owners on wage increases. The difficulty goes back to 1958 when the deckhands received a wage increase which the officers have since been trying to match. Both categories receive a basic wage plus a bonus dependent on the fish catch. The improvement sought by the officers in their basic salary would amount to approximately a 35-percent increase in their total income.

The dispute was settled March 31 through efforts of the State Labor Mediator. Since only two trawlers were in port to take part in the strike, its effects were minimal.



**Iceland (Contd.):**

Representatives of the Trawler Owners Association and the unions of the various trawler officer groups agreed to an increase of about 42 percent in bonuses based on the fish catch. No basic wage settlement was made, the United States Embassy in Reykjavik reported on March 24, 1960.

**India****SMALL MODEL FISH-MEAL PLANT NOW IN OPERATION:**

A small fish-meal plant, developed by a United States-educated fisheries engineer, was demonstrated in June 1959 in Bandra, Bombay. The plant was the first of its kind in India and was built entirely to suit local conditions. It requires no power and it consists of a double-jacketed dryer, a superheater, boiler and furnace, all built as one compact unit. The plant can be operated on any fuel available. Cost of operation is low, and each unit can handle some 5,000 pounds of raw fish per 24 hours. The plant is expected to cost about Rs. 6,000 (about US\$1,270).

One plant was expected to go into production in February at Manipal, District Udipi, Mysore State.

**Italy****SPECIAL LICENSE SUSPENDED ON MOST FISHERY IMPORTS FROM DOLLAR AREA:**

The Government of Italy no longer requires that special licenses be obtained for a number of commodities imported into that country from the United States and other nations in the dollar area. Thus, U. S. exporters of certain fishery products were placed on an equal basis, as far as tariff treatment is concerned, with exporters of similar products from non-dollar area countries.

The following fishery products were included among the items liberalized:

(1) fish--fresh, chilled, or frozen; salted or in brine, dried, or smoked; canned (in hermetically sealed containers); (2) crustaceans and molluscs (whether in shell or not)--fresh, chilled, or frozen; salted or in brine, dried, or smoked; and (3) fish and shellfish meal.

Still requiring special import licenses, however, were imports of fish oils, canned crustaceans and molluscs, and shelled crustaceans simply boiled in water (for example, peeled shrimp simply boiled in water).

**Japan****SUMMER ALBACORE SEASON EXPECTED TO BEGIN EARLIER THAN USUAL:**

It is generally conceded by Japanese observers that the 1960 Japanese summer albacore season will begin earlier than usual. The great mass of cold water which formed last fall off Shizuoka Prefecture coast still maintains a great strength and the Black Current is forced to go round its southern side and move northward along the Izu Seven Islands. Coming close to shore at the Nojimazaki Point, it reached the coast of Kinkazan, Miyagi Prefecture, late in March.

For this reason water temperatures along the coast late in March were 1° or 2° C. (1.8°-3.6° F.) higher than usual, and off the Nojimazaki Point were about 4° C. (7.2° F.) higher. This means that spring has come sooner to the sea and by mid-April the vanguard of summer albacore schools was expected.

News of the appearance of skipjack (small fish ranging in size from 9-13 pounds) at various points along the coast of Central Honshu was received late in March. This species, too, was about one month earlier than usual and substantiated the belief that spring oceanic conditions were beginning to prevail.

According to a spokesman for the Shimizu fish market, he had never seen skipjack landings as early as this spring. The earliest landings are usually seen in the beginning of April. He predicted

## Japan (Contd.)

an early beginning of summer albacore fishing under the prevailing conditions.

The Fisheries Research Institute of Tokai University is reported to have stated that summer albacore fishing will begin earlier this year. The present oceanic conditions are similar to those in 1954 and 1955. In those years, skipjack fishing was very good but that of summer albacore was normal. In 1959, the summer albacore fishing was extremely poor but this year winter albacore fishing was fair. Good conditions, therefore, for the coming summer albacore fishing prevail. At any rate, although information with which to judge the summer fishery is incomplete, normal albacore fishing can be reasonably expected at least. (Fisheries Economic News, March 30, 1960.)

\*\*\*\*\*

STUDY OF ALBACORE SPAWNING  
IN BONIN ISLANDS AREA PLANNED:

The theory is generally accepted at the present time that the principal spawning ground of albacore in the North Pacific is the area, approximately 10°-30° north latitude, under the influence of the North Equator Current and that the peak of the albacore spawning season is in the summer.

In order to verify this theory, the Nankai-ku Fisheries Research Institute will send its research vessel Shimyo Maru to waters around the Bonin Islands in June-July to conduct an oceanic investigation.

The international investigation of albacore tuna came up for discussion at the Japan-United States tuna conference held in Tokyo in October 1959. It was proposed at that time that the tuna investigations would be conducted jointly, but later it was decided that the investigations would be carried out individually. However, it was agreed that, after completion of the investigations, biological data would be exchanged.

The investigation of albacore spawning in the designated area had not been made thoroughly up to the present time.

If detailed knowledge of the albacore spawning ground in the North Pacific is obtained through the joint undertaking by Japan and the United States during the summer months, an important key to the knowledge of tuna resources will be acquired and results of the investigation are expected to produce much in connection with the development of new albacore fishing grounds. (Fisheries Economic News, March 26, 1960.)

\*\*\*\*\*

FROZEN TUNA EXPORT QUOTAS  
ESTABLISHED FOR 1960:

The 1960 export quotas for frozen tuna have been set up, according to a report of agreement reached at a mid-March meeting of the Export Frozen Tuna Fisheries Association Atlantic tuna liaison committee.

The quotas approved were slightly different than those reported earlier and are as follows:

Yellowfin 35,000 metric tons for direct shipments from Japan; for transshipped exports, voyages will be limited to 100 or less with the quantity in proportion to direct shipments as a premise. Loins 3,000 tons. Albacore 30,000 tons. Quotas for Italy set at 15,000 tons of tuna.

At the March 15 directors' meeting of Japan Frozen Foods Exporters Association, reports on 1960 (April 1960-March 1961) frozen tuna export regulations for Italy, frozen tuna loins export regulations, those for the frozen broadbill swordfish, and allocations of frozen albacore exports to the United States and Canada were discussed. They were approved as originally introduced and were expected to be presented to an emergency general meeting.

A meeting of the Italian division of the Association was also held. The report of the director of a Japanese fishing company, who is traveling in Europe, pointed out that the Italian tuna importers had stated that in addition to direct receipts from Japanese vessels, Japanese frozen tuna was finding its way in large quantities to Italy via Yugoslavia, France, and other countries.

\*\*\*\*\*

Japan (Contd.):

#### EXPORTS OF FROZEN TUNA:

The Japan Frozen Tuna Export Sales Company compiled data on frozen tuna exports shipped from Japan from March 1, 1959, through February 1960. Frozen albacore amounted to 25,800 short tons, yellowfin to 22,900 tons, and loins to 3,970 tons. Prices (f.o.b. per short ton) ranged from a low of US\$270 to a high of US\$420 for albacore, US\$220 to US\$255 for yellowfin; prices of loins were \$730-\$885 for albacore and \$565-\$635 for yellowfin. There was a considerable fluctuation of prices during the year.

The spread in albacore prices was particularly wide because the 1959 summer albacore catch was only about half that of 1958 (24.8 million pounds), and competition between cannery and freezers sent the ex-vessel price up and also for a time raised the export price. Later an increase in transshipments due to good fishing in the Atlantic brought the price down again.

Yellowfin came under regulation beginning with the 1959 export year, but because of an increase in United States demand and the problems connected with the quality and recovery of shipboard-frozen fish transhipped directly from the Atlantic fishery to the United States, exports from Japan showed a rapid increase. Loins attained the 3,000-ton quota for the 1959 export year, and are showing a stabilized trade pattern. (*Nippon Suisan Shimbun*, March 28, 1960.)

\*\*\*\*\*

#### CANNED LIGHTMEAT TUNA PRICE TO CANADA RAISED SLIGHTLY:

Japan Export Canned Tuna Manufacturers Association at its directors' meeting on March 11, 1960, discussed a new price list for exports to Canada. The price for Canada was raised by about ¥100 (about 25 U. S. cents) per case for lightmeat with no change for whitemeat.

Prices for exports to the United States were to be discussed at the next meeting.

\*\*\*\*\*

#### THIRD SALE OF CANNED TUNA FOR EXPORT TO UNITED STATES:

Japan Canned Foods Exporters Association is expecting the third sale of canned tuna for export to the United States soon, according to the *Fisheries Economic News* of March 31, 1960. Because stocks on hand are light at present, only 100,000 cases of whitemeat and 100,000 cases of lightmeat tuna will be put on sale. The prices will be \$10.15 on whitemeat and \$6.80 a case f.o.b. on lightmeat tuna, as in the recent past.

\*\*\*\*\*

#### STUDY OF OVERSEAS MARKET FOR CANNED TUNA:

The Japan Export Canned Tuna Manufacturers Association at its directors' meeting on March 11, 1960, discussed the sending of teams to the United States, Europe, and Asia to study the overseas market for canned tuna.

The United States and European teams were scheduled to leave Japan early in April. Length of the trip was to be about a month. The sending of the Asiatic team was postponed.

\*\*\*\*\*

#### POLICY ON TUNA MOTHERSHIP OPERATIONS:

The Japanese Fishery Agency is reported to have started to consider its licensing policies for the mothership tuna fishery in 1960. Last year the policy was to grant permission to those firms that had past records (4 fleets operated in 1959), but this year a new policy may be adopted in connection with the reorganization of Japan's northern seas fisheries. The fishery companies' views are: (1) expansion of operation area, (2) use of catchers carried on board the motherships, and (3) licensing of new mothership fleets.

The Fishery Agency seems to be reluctant at present to expand the operational area but a study will be made on small catchers carried aboard the mothership and increased number of motherships resulting from reorganization of fisheries in northern seas.

## Japan (Contd.):

Each mothership company is busy making preparations and asking authorities in charge to clarify their stand regarding this year's policy. (Fisheries Economic News, March 25, 1960.)

\* \* \* \* \*

#### LARGE-SIZE TUNA VESSEL LAUNCHED:

At the Shimizu shipyard of a Japanese firm, a large size tuna vessel-freezer-carrier, Eio Maru, 1,280 tons, was launched for one of the large Japanese fishing companies.

The ship was expected to be completed at the end of April and sail for the Indian Ocean to carry out tuna fishing, using its 19-ton catcher, carried on board. (Fisheries Economic News, March 30, 1960.)

\* \* \* \* \*

#### CRAB FACTORYSHIP SAILS FOR BRISTOL BAY:

The Japanese crab factoryship Tokai Maru (5,286 tons) left the port of Hakodate, April 5, 1960, for Bristol Bay, Alaska, to fish and process king crabs. The vessel is jointly operated by two Japanese fishing companies.

\* \* \* \* \*

#### FISHING COMPANY STARTS TRAWLING OPERATION IN NORTH AFRICA:

A Japanese fishing company has established a joint fishing company at Tangier, Morocco, Africa, to carry out trawling operations. The Japanese ves-

sel Taiyo Maru No. 6, which is a part of the Japanese investment in the enterprise, is understood to be on its way to Italy with its first catch. With extremely abundant bottomfish, including sea bream, the value of the fishing ground is considered high. The Japanese firm is said to be planning to send 5 trawlers of the 1,300-ton class and begin regular trawling operations. It also plans a cold-storage facility at nearby Las Palmas in the Canary Islands (Spanish territory).

The Japanese firm's plan was for the operations to begin in May. Catches will be landed at the Las Palmas base and sorted out for Europe and Japan. A thorough investigation of local conditions is being expedited. The Spanish, however, are said to be planning to refuse permission for the Japanese to operate out of Las Palmas unless their joint investment formula is accepted. Also, Spanish registration is required for operations in its territorial waters and shipments of some of the catch to Japan must take the form of exports from Spain.

Trawling operations are planned in the area, south of 25° South latitude off the eastern coast of Africa. At present, plans call for two trawlers of the 1,300-ton class to operate in the designated area.

\* \* \* \* \*

#### FISHING VESSELS LICENSED FOR CONSTRUCTION, APRIL 1, 1959-MARCH 31, 1960:

From April 1, 1959, to March 31, 1960, the Japanese Fisheries Agency issued licenses for 1,062 fishing vessels (including 16 Government vessels)--a total of

Japanese Fishing Vessels Licensed for Construction, April 1, 1959-March 31, 1960

Vessel Type	Total		Steel		Wood	
	Number	Gross Tons	Number	Gross Tons	Number	Gross Tons
Whale catcher . . . . .	3	1,068	2	1,039	1	29
Otter trawler . . . . .	6	9,023	6	9,023	-	-
East China Sea trawler . . . . .	100	8,180	95	7,833	5	347
Medium trawler . . . . .	134	5,786	22	1,906	112	3,880
Tuna boats . . . . .	322	39,823	93	28,969	229	10,854
Seiners . . . . .	145	6,040	61	3,584	84	2,456
Mackerel pole and line . . . . .	42	1,638	-	-	42	1,638
Lift netters . . . . .	42	1,685	3	252	39	1,433
Miscellaneous long-liners . . . . .	109	5,305	12	878	97	4,427
Salmon gill-netters . . . . .	68	3,239	16	1,335	52	1,904
Carriers . . . . .	22	20,473	7	20,040	15	433
Government vessel . . . . .	16	2,406	8	1,935	8	471
Other . . . . .	53	1,504	-	-	53	1,504
Totals . . . . .	1,062	106,170	325	76,794	737	29,376

## Japan (Contd.):

106,170 gross tons. The total vessels licensed for construction included 325 steel vessels (76,794 gross tons) and 737 wooden vessels (29,376 gross tons). Eighteen vessels totaling 1,205 gross tons were licensed for construction, but the licenses were withdrawn during the fiscal year. The 325 steel vessels averaged 236.3 gross tons and the 737 wooden vessels averaged 39.9 gross tons in size.

\* \* \* \* \*

### FISH MEAL AND FLOUNDER FACTORYSHIP OPERATIONS IN BERING SEA FOR 1960:

This year there will be a total of four Japanese fleets producing fish meal and flatfish in North Pacific waters, two operated by the Hokuyo Suisan Company, one by Taiyo Gogyo, and one by Nippon Suisan. They were due to leave their bases between April 16-22 for about four months of operation in the Bering Sea. This year a total fish-meal production of 53,500 tons is planned. Of this quantity, about 36,000 tons will be for export and the remaining 17,500 tons will be sold on the domestic market.

The first fish-meal factoryship operation was conducted by the Hokuyo Suisan Company with one fleet in 1958. In 1959 there were two such fleets, and this year full-scale operations will be carried on with four fleets. The industry considers that four fleets is probably the limit, in terms of fishing grounds and the fishery resource. Even in last year's operations, competition with the flatfish freezing fleets became somewhat of a problem, and from the standpoint of the resource an operating scale of four fish-meal fleets seems likely to become the standard. However, in terms of breaking even financially, all of the companies fear that operating for fish-meal production alone will be unprofitable, and so they are placing more emphasis on frozen products, liver oil, solubles, and other byproducts in order to utilize all the raw material. The companies--Taiyo Gogyo and Nippon Suisan--which are newly entering the field, are also looking at fish-meal operations as a compensation for the cutback of their salmon fishing, but they are taking a cautious view of the profit possibilities, and for that reason this year's fish-meal fishery will be watched with great interest.

Composition of the fleets and production plans are as follows:

Hokuyo Suisan Company: Kinyo Maru fleet: 24 fishing boats (16 pair trawlers, 8 single trawlers), 1 scouting boat. Planned catch, 48,000 tons of raw fish. Planned production, 13,500 tons of meal, 450 tons of liver oil, and 200 tons of frozen fish. Renshin Maru fleet: 27 fishing boats (22 pair trawlers, 5 single trawlers), and 2 scouting boats. Planned catch, 99,000 tons of raw fish. Planned production, 14,000 tons of meal, 450 tons of liver oil, 2,500 tons of solubles, and 4,000 tons of frozen products.

Taiyo Gogyo Company: Soyo Maru fleet: 30 fishing boats (14 pair trawlers, 16 single trawlers). Planned production, 13,000 tons of meal, 6,500 tons of frozen products, and 3,800 tons of solubles.

Nippon Suisan Company: Gyokuei Maru fleet: 25 fishing boats (11 pair trawlers 1/2, 14 single trawlers). Planned catch, 85,079 tons of raw fish. Planned production, 13,068 tons of meal, 2,650 tons of frozen products, 750 tons of liver oil, and 1,500 tons of solubles.

The Kinyo Maru and the Renshin Maru were due to sail from Hakodate on April 16, the Soyo Maru sailed from Tokyo on the 13th, and the Gyokuei Maru was due to sail from Kobe on April 22.

A reception was held at Yokohama on April 11 aboard the Hokuyo Suisan Company's new fish-meal ship Renshin Maru (14,094 gross tons), a former oil tanker. The reception was attended by the Director and former Director of the Japanese Fisheries Agency.

The President of the Hokuyo Suisan Company stated that his ambition was to change fish-meal from a food for chickens and pigs to a food for humans, and that this was why the Renshin Maru has been equipped with refrigeration and with a filleting and fish-skinning machine.

The Renshin Maru is 167 meters long, 21 meters abeam, and has a 7,000 hp. Diesel engine giving a speed of 14 knots. Equipment includes two fish-meal lines, giving a daily production capacity of 100 tons; one fish skinning and filleting machine handling 30-40 fish per minute; freezing capacity of 40 tons per day; and refrigerated cargo space for 2,000 tons. (Nippon Suisan Shimbun, April 13, 1960.)

[Obviously can't have an odd number of pair trawlers. Real distinction is between trawlers of type licensed to fish west of 130° E. longitude, mostly over 55 tons and mostly pair trawlers, and boats licensed only to fish east of that longitude, which are mostly under 50 tons and mostly single trawlers.]

\* \* \* \* \*

### HERRING CATCH OF ABOUT 9,000 TONS IN BERING SEA EXPECTED:

Two Japanese fishing companies expect to do experimental fishing for herring, using boats attached to the fish-meal fleets which are operating in the Bering Sea. According to the two Companies' tentative plans, the Kinyo Maru fleet is to catch 3,000 metric tons, while the Gyokei Maru fleet is scheduled to catch about 2,000 tons. In addition, one company will send its Shinyo Maru fleet and the other company its Itsukushima Maru fleet into the Bering Sea for mothership-type frozen flatfish operations, and these fleets will take, respectively, about 2,700 tons and 1,000 tons of herring. Thus the total planned herring catch for the two companies is about 8,700 tons. (Suisan Keizai Shimbun, April 13, 1960.)

\* \* \* \* \*

### NORTH PACIFIC MOTHERSHIP SALMON FLEET REDUCED IN 1960:

The Japanese North Pacific mothership salmon fishing fleets in 1960 will consist of 12 motherships and 410 catcher vessels. This compares with a fleet of 16 motherships and 460 catcher vessels in 1959. The same five Japanese fishing companies will participate in the 1960 salmon fishery.

One firm with 6 motherships and 173 catchers in 1959 will have 4 motherships and 154 catchers in 1960. A second firm with 5 motherships and 145 catchers in



## Japan (Contd.):

1959 will operate 4 motherships and 129 catchers in 1960. Two additional firms which operated 4 motherships (one mothership was a joint venture) and 114 catchers are allowed 2 motherships and 66 catchers in the case of one of the firms and 1 mothership and 36 catchers for the other firm. The fifth firm will operate one mothership in 1960 as in 1959, but catchers are reduced from 28 in 1959 to 25 in 1960.

\* \* \* \* \*

FORMER SALMON MOTHERSHIP TO ENTER BERING SEA FISHERY:

The former salmon mothership Meisei Maru, purchased about March 1960 from the Nichiro Fishing Company by the Hokuyo Suisan Company, has been renamed the Shinyo Maru. She is to be sent to the Bering Sea to produce frozen crab on the following production plan: 200 tons of frozen crab (equivalent to 20,000 cases of canned crab), 2,700 tons of frozen herring, 700 tons of frozen cod, and 400 tons of frozen rockfish and Alaska pollock. (Nippon Suisan Shimbun, April 13, 1960.)

\* \* \* \* \*

ANTARCTIC WHALING CATCH HIGHER FOR 1959/60:

After some indecision, the Japanese Fisheries Agency called a halt to the 1959/60 Antarctic whaling season at midnight, March 26, and the six Japanese whaling fleets left for home. In this, the first postwar season in which the catch limit set by the International Whaling Commission was inoperative, because of the withdrawal of Norway and the Netherlands, the Japanese fleets took a total of 5,217 blue-whale units. This was the largest Antarctic whale catch made by Japanese whalers in the postwar period, and was 179 blue-whale units more than the Japanese caught in the 1958/59 season.

Norway was reported to have caught a total of 4,112 units as of March 26. The European fleets, however, remained on the whaling grounds in an attempt to improve their catches in the last few days of the season, which under Whaling Commission rules ended April 7.

Not all of the three Japanese operating companies fared equally well this season. The two fleets of one company filled their initial catch quota as well as the increase granted by the Fisheries Agency just before the end of the season. The two fleets of another company filled the company's initial quota, but ended with 41 units short of the additional quota. But this company's factoryship No. 2 Nisshin Maru, with a catch of 1,121 units, was the top boat among all of the Antarctic fleets, except for the two Soviet expeditions.

It had been anticipated that Antarctic whaling this season, with two countries' fleets operating outside of the 15,000-unit over-all catch limit of the Whaling Commission, might result in an excessively large catch of 17,000-18,000 units. This danger seems to have faded now, as the total catch by all countries as of March 26, was only 14,676 units (total as of April 7 was estimated to be about 15,437 units). Reports reaching Japan from the Antarctic have tended to blame the generally poor whaling this season on bad weather. However, if the European whalers ascribe their poor performance to a scarcity of whales, there should be a renewed interest in getting all of the Antarctic whalers back under the regulations of the International Whaling Commission. (United States Embassy in Tokyo reported on April 1, 1960.)

\* \* \* \* \*

LICENSE FOR NEW NORTH PACIFIC WHALING FLEET REQUESTED:

Officers of two large Japanese fishing companies called on the Director of the Japanese Fisheries Agency on April 11, 1960, to present their companies' joint request for permission to engage in mothership-type whaling operations in the North Pacific. The Director of the Fisheries Agency did not give immediate approval.

The plan of the two companies calls for use of the Dutch mothership Bremendal (10,725 tons, 2,400 hp. Diesel, 13 knots speed) with seven of the 700-ton catcher boats belonging to the Dutch William Barentz fleet. The catch would be 600 blue-whale units of baleen whales the first year only, with 800 units thereafter, and 300 sperm whales.

**Japan (Contd.):**

It was pointed out to the applicants that using the vessels of a country that has abrogated the Whaling Convention raises a moral problem, and furthermore it was agreed at the meeting of the International Whaling Commission that no aid would be given to the nations which left the Convention. (*Nikkan Suisan Tsushin*, April 12, 1960.)

**Korea****PROCESSORS CLOSE CONTRACTS FOR SHRIMP IN APRIL:**

After a lull during March 1960, two Korean shrimp processors resumed activities during April. A US\$8,000 contract with the U. S. Army was signed. Also, a contract valued at US\$13,000 for frozen shrimp for export was closed with private business interests.

**Kuwait****U. S. FIRM STARTS FISHING FOR SHRIMP:**

An American firm in Kuwait has started fishing for shrimp, which are then frozen and exported, according to a March 26, 1960, report from the United States Consul in Kuwait.

Fishing in Kuwait (south of Iraq on the northwest coast of Persian Gulf) is carried out by small craft using primitive methods. These craft catch just about enough fish to take care of local needs, but none for export.

**Libya****FISHERIES TRENDS, FOURTH QUARTER 1959:**

The Tripolitanian fishing and canning operations were extended to late September 1959 by the appearance of a Japanese deep-sea trawler fleet. Fishing activity returned to its dormant pattern,

however, during the last quarter of 1959, but canning was reported to have extended to mid-quarter.

Available statistics regarding exports of fresh fish from Tripolitania indicate a considerable decrease from the amounts exported in 1958 for the same period. High domestic prices indicated that the catch was not being sold locally and that the production was proportionately also less than recorded for 1958, which was considered a good year.

Statistics on the landings of tuna were unavailable for the last quarter of 1959, but it is believed that the Japanese fleet increased the landings of tuna. Export of canned tuna reached record proportions in July and August 1959, but leveled off in September. During May-September 1959, 457 metric tons of canned fish were exported as compared with 255 tons exported in the same period of 1958, and 458 tons in May-September 1957. Indications are that exports during October-December 1959 will show a significant increase over levels of former years, due to the time lag in processing the catch.

There was no officially-recorded activity among the once flourishing Cyrenaican sponge fishing industry and consequently no landings. The Tripolitanian sponge industry also appears to have deteriorated further over levels of former years. Statistics for sponge exports at mid-1959 showed a countrywide total of 685 kilos (1,500 pounds) exported as compared with a total of 26,000 kilos (57,320 pounds) for all of 1958, and about 27,000 kilos (59,524 pounds) in 1957. Deep-sea fishing boats, mostly of Greek origin, made port in the country's harbors from time to time for provisioning and to escape some violent gales during the latter part of 1959.

Some observers feel that Libyan impediments to coastal sponge fishing by foreign divers might wreak severe harm to the sponge beds which require regular harvesting to remain healthy. The 1959 production of sponges in Cyrenaica is as yet unknown. A long established and reliable sponge dealer in Tripolitania has confirmed earlier estimates that the Province's sponge harvest was approxi-

## Libya (Contd.):

mately 6,000 kilos (13,228 pounds) at most. Prices for export in 1959 were the best in years with first-grade sponges selling at US\$22.40 a kilo (\$10.16 a pound) while fourth-grade sponges sold at US\$2.80 a kilo (\$1.27 a pound). Mixed sponges were quoted at US\$9.80-\$11.20 a kilo (\$4.45-\$5.08 a pound). According to unofficial reports the bulk of the sponges were shipped to Italy. (United States Embassy, Tripoli, February 8, 1960.)



## Mexico

# DECREE PROHIBITS VESSELS FROM FISHING WITHIN NINE MILES OF BORDER:

A Mexican Executive Decree dated March 26, 1960, prohibits Mexico's fishing fleets from carrying out marine fishing activities within 9 nautical miles of her boundaries with other countries. Nonfishing zones for Mexican vessels are being set up that extend 9 miles into the sea along the borders and 9 miles along the Mexican coast adjacent to the borders.

Furthermore, Mexican vessels are only authorized to fish in Mexican territorial waters or on the high seas, unless it has been properly established that another country has granted permission for Mexican vessels to fish within their territorial waters. Mexico claims 9 nautical miles as territorial waters.

This Decree, which entered into effect 10 days after publication, provides stiff penalties for violators. Permissionnaires or concessionaires, owners, proprietors, lessees, and masters are held jointly and severely liable for violations. Masters may have their licenses suspended for as much as one year. Fines amounting up to 100,000 pesos (US\$8,000) may be assessed owners etc., and those in possession of permits or concessions shall have them cancelled. Provision is also made for seizure and auction of the vessel, if necessary, to cover the amount of the fines.

The purpose of the Decree is to maintain and develop good international relations. In recent months reports have again been current that Mexican shrimp boats had been fishing in the Pacific in waters to the south of Mexico. At the end of 1958 Guatemalan airplanes fired upon Mexican shrimp boats, allegedly fishing illegally in Guatemalan waters, and several fishermen were killed. This led to a severance of relations between the two countries which lasted a number of months.

For more than a year Mexican patrol boats have been maintaining guard along the Guatemalan border in an attempt to prevent Mexican shrimpers from entering Guatemalan waters. Various boats have been detained and fines and penalties have been placed on the owners and masters. (United States Embassy, Mexico, March 29, 1960.)

\*\*\*\*\*

# GULF OF CALIFORNIA SHRIMP FISHERY TRENDS, MARCH 1960:

The shrimp fishing fleet out of Guaymas on the west coast of Mexico was tied-up during most of the January-March 1960 period due to a dispute between the Confederacion Nacional de Cooperativas Pesqueras (National Federation of Fishery Cooperatives) and the Camara Nacional de la Industria Pesquera (National Chamber of the Fishing Industry) over the interpretation of certain clauses in their contract. The cessation of activity lasted for 74 days, during which time the 150 boats comprising the Guaymas shrimp fleet remained at anchor in the bay, and over 3,000 families dependent on this industry had no source of income. Since the boats were inactive, the shrimp freezing plants and packing plants also remained idle.

After settlement of the dispute on March 19, over half of the boats could not sail because of damages suffered during the period of inactivity. About 30 vessels had to be hauled out for repair work before they could be considered seaworthy and other vessels had gone to other ports in the Gulf of California.

Aside from the dispute at Guaymas, shrimp catches were described as medi-

## Mexico (Contd.):

ocre to poor, and vessel owners reported that they were operating at a loss of over 500 pesos (about US\$45) a metric ton under the then existing agreement with the cooperatives. The prices for shrimp exported to the United States were down about 20 percent from the previous year and the industry in the Guaymas area was fearful that the increasing competition in the United States market from Far East competitors would soon force the Mexican industry out of business unless some preferential treatment could be arranged for the Mexican product. The Mazatlan shrimp industry appeared more optimistic due to the recent decline in the stocks of fresh shrimp in the United States and the increase in prices which occurred during the Guaymas shutdown.

The Mazatlan shrimp fleet of 204 vessels which was not hampered by disagreements between vessel owners and cooperatives landed a total of 3,845 metric tons of shrimp for the season from October 1959 through February 1960. Landings of shrimp have been described as "good" and better than last year, due to the heavy rains and the opening of new fishing grounds. Shrimp catches were expected to decline quite rapidly between the end of February and the beginning of the closed season on May 15. (American Consulate, Nogales, Sonora, Mexico, March 31, 1960.)

\*\*\*\*\*

#### SPINY LOBSTER AND ABALONE FISHERIES TRENDS:

Spiny Lobster: During the 1959/60 spiny lobster fishing season in the Ensenada area of Mexico which ended on March 15, 1960, estimated landings amounted to only 1,250,000 pounds. This amount was lower by 25 percent from the 1,600,000 pounds landed during the 1958/59 season. The highest landings in the past seven seasons were made in 1954/55 when a total of 2,200,000 pounds was landed. In the 1957/58 season landings were 1,700,000 pounds, in 1956/57 season 1,800,000 pounds, in 1955/56 season 2,000,000 pounds, and in the 1953/54 season 1,969,000 pounds.

Despite the poor landings in the 1959/60 season, the Regional Federation of Fishing Cooperatives was able to repay the Banco de Fomento Cooperative the current loan of about US\$120,000 and amortize about \$52,000 of the \$737,000 outstanding debt.

Abalone: The landings of abalone for the season that ended on December 15, 1959, according to an unconfirmed report, amounted to about 6 million pounds.

The 1960 abalone fishing season opened on March 16, and the fishermen are predicting another good year due to new equipment which permits them to fish in deeper water. About 800 families are dependent on the abalone catch for a living. Due to the refusal of the Cooperative Bank to grant credit to the fishing cooperatives, they were forced to obtain necessary funds from the abalone packing firms. (United States Consulate, Tijuana, March 29, 1960.)

\*\*\*\*\*

#### STATEMENT ON LAW OF THE SEA CONFERENCE:

A statement was released on March 10, 1960, by the Mexican Ministry of Foreign Relations concerning the Second Conference on the Law of the Sea at Geneva, which opened on March 17.

The statement announced that the Mexican delegation would push the same formula which it advocated at the First Conference, namely at flexible 3- to 12-mile limit at the option of each coastal state. However, the statement also announced that the delegation would be conciliatory and disposed to cooperate with other states in the hope of reaching a common accord. (United States Embassy, Mexico, March 11, 1960.)

\*\*\*\*\*

#### TAMPICO AREA SHRIMP FISHERY TRENDS, APRIL 1960:

Two United States shrimp vessels were seized for alleged fishing in Mexican territorial waters at Tuxpan in early February 1960, but after being held for 10 days were released, the seizures being declared illegal. At about the same



## Mexico (Contd.):

time, 6 more U. S. vessels were seized at Tampico, each one having to post a bond of 30,000 pesos (US\$2,400).

The fishing industry has been vocal in the local press against: (1) the Santos "dynasty" in Mexico City, which they feel is responsible for the sad plight of fishermen throughout the country; and (2) the poor weather that kept the fishing fleet in the port of Tampico almost continuously during January and February.

The resignation at the end of March of the Director General of Fisheries was welcomed as a step in the right direction by the Federal Government to alleviate the economic situation of the industry. The weather improved in March, but the complaint was that there was no shrimp.

An American technician on a Mexican boat states that there are no shrimp along the coast west of Campeche, which is east along the Gulf coast almost to Yucatan. Local boats will not go that far afield for shrimp, a Tampiqueno preferring to go out in the early evening to fish in local waters and to return at dawn.

Undoubtedly United States boats are operating in the vicinity of Campeche as their presence has not been reported in the coastal waters of Tamaulipas and Veracruz since the middle of February. (United States Consulate, Tampico, April 5, 1960.)



## Netherlands

JAPANESE MAY PURCHASE  
WHALING VESSELS:

Two Japanese whaling companies have approached the Netherlands Whaling Company in Amsterdam about the possibility of buying the Dutch whale-oil tanker Bloemendael, which has an estimated value of fl. 10 million (about US\$2.7 million), and some old Dutch catchers located at Capetown, South Africa. The Bloemendael was built in 1931 (at which time it was called the William Barendsz) and originally used as a factoryship. Official negotiations have not yet been held,

but it is possible that a Japanese delegation will soon visit the Netherlands for this purpose. (United States Embassy report from The Hague, April 19, 1960.)



## New Hebrides

## TUNA OPERATIONS:

Tuna operations in the New Hebrides (South Pacific) are conducted out of Santos by a fleet of 7 Japanese long-liners and crews. The boats are between 80 and 150 tons, carry an average of 20 men, and catch about 40 tons of yellowfin, big-eyed, and albacore tuna in a 3-week trip, which may take them to fishing grounds as far as 600 miles from their base.

The lines are generally set once a day, either at dawn or sunset, when the fish are believed most likely to take the bait, which consists of frozen mackerel-pike imported from Japan. One ton of bait is said to catch about 50 tons of tuna, if fishing is good. It takes  $4\frac{1}{2}$  hours to set the lines which are left in the water  $2\frac{1}{2}$  hours. It takes 13 hours to haul back and ice-down the fish in the holds. The fish are packed in crushed ice, not frozen. After stowing is completed, the men sleep for three hours, when it is time to set the lines again. This goes on for three weeks, as a rule, by which time the hold is full and the vessel can return to base. If the catch is 40 tons, the vessel ties up for 24 hours only, to allow the fish to be unloaded, weighed, and put into the freezer ashore; the vessel is fueled, iced, and leaves for another three-weeks trip.

The frozen albacore tuna is sent to the United States, other products to Japan. The base employs 34 Japanese ashore, helped by 35 local workers, and 5 local Europeans. The 34 Japanese are to be replaced gradually by local workers, as soon as they can be trained. The present freezer is capable of holding about 700 tons of fish; and there is an ice-making plant of 10 tons per batch. Over 100 tons of oil are used at present per month to fuel the boats and generate electricity for the shore installations. (Pacific Islands Monthly, July 1958.)





## New Zealand

### REACTION TO JAPANESE FISHING IN NEW ZEALAND WATERS:

The New Zealand press reported on March 15, 1960, that the Japan Fishery Board had decided to start full-scale Japanese trawling in the waters around New Zealand this year. A New Zealand fishing industry spokesman expressed alarm at this decision, stating that New Zealand fishermen were subject to certain conservation rules while Japanese fishermen would be unregulated.

Asked for comment, the New Zealand Minister of Marine stated that "he personally and the Government would do all possible to ensure the protection of the New Zealand fishing industry." Several newspaper editorials questioned why the New Zealand fishing industry was not fully using the resources available in the area. (United States Embassy, Wellington, report of March 17, 1960.)



## Norway

### WINTER HERRING LANDINGS LOWEST IN 15 YEARS:

The 1960 winter herring fishery off Norway's west coast ended late in March with landings of only 299,870 metric tons (3,220,000 hectolitres)--the lowest landings since the war. The landings from the fat herring phase of the winter fishery, which ended on February 23, were about 200,000 tons. The second phase (spring herring) of the winter herring fishery added only about 100,000 tons to the 1960 season's total. The Norwegian herring industry has a capacity to handle about 1,118,000 tons (12 million hectolitres) and landings of 745,000 tons (8 million hectolitres) are needed to show a profit for the season.

The serious economic situation created by the failure of the winter herring fishery has been recognized by the Norwegian Government. A special committee has been appointed to investigate the entire matter and make recommendations for the future. In addition, the sum of about US\$700,000 has been made available for financing public works in the areas

hardest hit by the herring fishery failure. (United States Embassy dispatch from Oslo, April 13, 1960.)

\*\*\*\*\*

### ONE-NINTH OF HERRING PURSE- SEINERS CAUGHT NO FISH IN 1960 SEASON:

A total of 50 of the 450 purse-seiners which took part in Norway's winter or fat herring fishery this year had no catch at all. About 300 of the vessels landed less than 3,000 hectoliters (270 metric tons). Crews aboard all these vessels may claim the Kr. 100 (US\$14.00) a week subsidy guaranteed by the state. (News of Norway, March 31, 1960.)



## Pakistan

### SURVEY FOR MOTHER-OF-PEARL IN BAY OF BENGAL PLANNED:

The Pakistan press reports that the Central Government has decided to conduct a survey of the sea bed surrounding St. Martin's Islands off the southern tip of East Pakistan to ascertain the quantity of mother-of-pearl deposits found at a depth of six fathoms in 1955. A button industry is under consideration, with the waste to be used in toothpaste manufacture. Because there are no Pakistani deep-sea divers, foreign divers and equipment will have to be used if the survey is made. (United States Embassy in Karachi, April 28, 1960.)



## Peru

### FISH MEAL INDUSTRY TRENDS, APRIL 1960:

Several problems of the Peruvian fishmeal industry have been before the public recently. Bad odors from nearby plants which have invaded the Lima area for several months reached a stage which forced the several municipalities to take action requiring the elimination of their causes. Plants have been given a limited period to do so. In that respect they have been aided by a labor dispute between the anchovy fishermen and the reduction plants which began on April 13, 1960.

## Peru (Contd.):

The shutdown of the fish-meal plants due to the dispute has permitted cleaning of equipment and plants, and installation of new deodorizing equipment.

The labor dispute, which affects only anchovy fishermen, is concerned with the following: (1) an assured sum of S/80 (US\$2.89) per ton of fish caught for division among vessel crews; (2) larger allowances for food while at sea, (3) free paid Sundays, and (4) the same benefits as those given labor in other branches of the economy. Benefits to the anchovy

raising of new barriers against Peruvian products. (United States Embassy dispatch from Lima, April 15, 1960.)

\*\*\*\*\*

# EXPORTS OF MARINE PRODUCTS, FOURTH QUARTER AND YEAR 1959:

Exports of principal marine products by Peru in 1959 amounted to 364,187 metric tons (valued at US\$44.6 million). Fish meal exports (277,600 tons) for 1959 were up about 138.1 percent from the 116,598 tons exported in 1958 and 308.5 percent from the 67,951 tons exported in 1957. Exports of fish oil were also

Peruvian Exports of Principal Marine Products, October-December and Year 1959						
Marine Products	Oct.-Dec. 1959			Year 1959		
	Quantity	Value <sup>1/</sup>		Quantity	Value <sup>2/</sup>	
	Metric Tons	Million Soles	US\$ 1,000	Metric Tons	Million Soles	US\$ 1,000
Fish meal . . . . .	93,510	276.6	9,986	277,600	860.5	30,842
Fish (frozen, canned, etc.) .	13,251	68.8	2,484	43,734	266.6	9,556
Fish oil . . . . .	3,351	8.4	303	17,165	44.7	1,602
Sperm oil . . . . .	2,100	7.6	274	10,004	33.9	1,215
Fertilizer (guano) . . . . .	8,318	20.1	726	11,767	28.3	1,014
Whale meal . . . . .	792	1.9	69	3,917	9.7	348
Total . . . . .	121,322	383.4	13,842	364,187	1,243.7	44,577

<sup>1/</sup>F.o.b. values, converted at rate of 27.70 soles equal US\$1 for 4th quarter of 1959.

<sup>2/</sup>F.o.b. values, converted at rate of 27.90 soles equal US\$1 for 1959.

fishermen have lagged behind other industries because labor legislation has not kept pace with the rapid development of the fish meal and oil industry. The 13-day tie-up of the anchovy fishermen ended on April 26 without any settlement of the issues at stake. However, it is hoped that the differences between the fishermen and the fish meal industry will be settled by negotiation.

A special commission appointed last December has submitted regulations governing labor conditions in the fishing industry, particularly relations between vessel owners and fishermen. The regulations were promulgated April 15, but benefits provided are not applicable, however, to the anchovy fisherman.

Reports that United States and British fish-meal producers are seeking protection against Peruvian fish-meal exports have resulted in forecasts of paralyzation of many Peruvian plants, and strong suggestions that the Government and public opinion should fight the

up sharply in 1959. (United States Embassy dispatch from Lima, March 24, 1960.)

\*\*\*\*\*

# BAN ON SHRIMP SALES LIFTED:

After three months of rigid enforcement, the Peruvian ban on the sale of shrimp was lifted on March 31, 1960. As a result of the closed season, the shrimp offered for sale was of good size and brought between S/20 and S/25 per kilo (32.7-40.9 U. S. cents a pound). About 1,400 kilos (3,086 pounds) were sold in Lima on the first day of permitted sale, most of it caught in Southern Peru, particularly in the Department of Arequipa, the United States Embassy in Lima reported in April 4, 1960.)

\*\*\*\*\*

# FISHERIES PROGRAM FOR 1960:

The Peruvian Bureau of Fisheries and Hunting of the Ministry of Agriculture has announced that its program for the cur-

## Peru (Contd.):

rent year will include: (1) an investigation of aquatic resources, principally bonito; (2) cultivation of fresh-water trout, shrimp, and other fish; and (3) technical studies on quality control and improvement of fishery products.

If projects now under study by the Ministry of Marine are carried out, a school of fisheries and navigation will be established in the near future near Ancon, a seaside resort a few miles north of Lima. (The United States Embassy dispatch from Lima, March 22, 1960.)



## Philippines

BAN ON THE EXPORT OF  
ORNAMENTAL SEA  
SHELLS PROPOSED:

According to press reports, Philippines manufacturers of pearl or shell buttons requested the Secretary of Commerce and Industry to have the present ban on exports of sea shells and other raw materials extended to cover ornamental shells. They reportedly complained that local supplies of ornamental shells were inadequate to meet their needs because of exports to Japan, Italy, France, and the United States. Lack of raw materials was given as a principal reason why the Philippines was unable to fill its duty-free export quota of pearl or shell buttons to the United States. Another reason given was the illegal exportation of shells.

The Secretary is reported to have informed the button manufacturers that he would first examine available data on the annual supply of commercial and ornamental shells in the Philippines and its disposition before acting on the total ban recommendation. (The United States Embassy dispatch from Manila, April 8, 1960.)



## Portugal

## CANNED FISH EXPORTS, 1959:

Portugal's exports of canned fish during 1959, amounted to 76,985 metric tons (4,194,000 cases), valued at US\$39.7 million, as compared with 68,102 tons, valued at US\$36.0 million in 1958. Sardines in olive oil exported during 1959 amounted to 59,136 tons, valued at US\$29.0 million.

Portuguese Canned Fish Exports, January-December 1959

Species	Jan.-Dec. 1959	
	Metric Tons	US\$ 1,000
Sardines in olive oil . . . . .	59,136	29,001
Sardine & sardinelike fish in brine . . . . .	1,624	347
Tuna & tunalike fish in olive oil . . . . .	3,936	2,777
Anchovy fillets . . . . .	6,359	4,678
Mackerel in olive oil . . . . .	3,236	1,636
Other fish . . . . .	2,694	1,299
Total . . . . .	76,985	39,738

During 1959 the leading canned fish buyer was Germany with 16,899 tons (valued at US\$8.5 million), followed by Italy with 10,199 tons (valued at US\$6.0 million), Great Britain with 7,688 tons (valued at US\$3.6 million), United States with 7,340 tons (valued at US\$5.0 million), and Belgium-Luxembourg with 5,026 tons (valued at US\$2.5 million). Exports to the United States included 2,707 tons of anchovies, 1,027 tons of tuna, 3,368 tons of sardines, and 40 tons of mackerel. (Conservas de Peixe, February 1960.)

\* \* \* \* \*

## CANNED FISH PACK, 1959:

The total Portuguese pack of canned fish for 1959 amounted to 62,459 metric tons. Canned sardines in oil (49,438 tons) accounted for 79.2 percent of the 1959 pack, the February 1960 Conservas de Peixe reports.

Portuguese Canned Fish Pack, 1959		
Product	Net Weight	
	Metric Tons	1,000 Cases
<u>In Olive Oil:</u>		
Sardines . . . . .	49,438	2,602
Sardinelike fish . . . . .	852	44
Anchovy fillets . . . . .	5,624	562
Tuna . . . . .	4,495	161
Mackerel . . . . .	583	23
Other species . . . . .	1,467	78
Total . . . . .	62,459	3,470

\* \* \* \* \*

## Portugal (Contd.):

FISHERIES TRENDS, DECEMBER 1959:

Sardine Fishing: In December 1959 the Portuguese fishing fleet landed 10,434 metric tons of sardines (valued at US\$1,117,739 ex-vessel or about \$107 a ton). During January-December 1959 a total of 123,314 tons of sardines was landed (valued at \$11.9 million).

Canneries purchased 55.5 percent or 5,789 tons of the sardines (valued at \$687,791 ex-vessel or about \$119 a ton) during December 1959. A total of 4,622 tons was purchased for the fresh fish market and 23 tons were salted.

Other Fishing: December 1959 landings of fish other than sardines were principally 7,555 tons of chinchards (value \$264,869). (*Conservas de Peixe*, February 1960.)

\* \* \* \* \*

FISHERIES TRENDS, FIRST QUARTER, 1960:

Sardine fishing was inactive during the first quarter of 1960, but the fleet sailed from Matosinhos on April 1, according to the United States Consulate in Oporto, presaging a record catch with this early start. The sardine closed season began on January 20 and ended in mid-March on varying dates for different ports.

Landings of sardines in 1959 (123,283 metric tons) were good in spite of the pessimistic views which prevailed at one time. While the 1959 catch was less in volume than in 1958, its over-all value was about 8 percent greater.

Canned fish exports in the first two months of 1960 were about 33 percent higher in value and volume than in 1959. The increase reflects larger sardine exports, as shipments of both anchovies and canned tuna were less than in the corresponding period of 1959. Large shipments to West Germany accounted for much of the increase.

Developments in the trawl fishery included the launching of two new trawlers—one for coastal and the other for high seas operations. A new fishing dock at Vila Real de Santo Antonio in southern Portugal was completed early this year at an estimated cost of about US\$525,000.

With hopes for a better season (1959 was poor) than they have enjoyed for the past two years, most of the cod-fishing fleet left for the Newfoundland Banks after the blessing of the fleet on April 3. There appears to be no prospects for a long-term solution to the problem of dried cod supply. The government has continued to place limited supplies on the market at regular intervals and although supplies at retail are not abundant, no serious shortage has developed. Ceiling prices, with the exception of the rise permitted in December on the highest grades, have been maintained as promised by the Secretary of State for Commerce in October 1959. Imports of dried cod in January-February have been very limited—705 metric tons as compared with 4,031 metric tons in January-February 1959, illustrating the difficulty which Portugal has had in supplementing its domestic supply with imports from the world market.

Reflecting Portugal's concern over this year's Conference on the Law of the Sea and its cod-fishing industry, the Portuguese Ambassador in Ottawa, in a press conference on February 9, said that Portugal could never accept the Canadian proposal on the law of the sea which would increase territorial waters for fishing purposes to 12 miles.

Other events in government during the first quarter of 1960 were the appointment of two committees to study fishing subjects. The first, headed by the Director of the Portuguese Institute of Marine Biology, will study metropolitan Portugal's resources of agar-bearing seaweeds. (Studies on the supply of agar-bearing seaweeds in the Azores have been completed, but the results have not been announced). The second has the more comprehensive objective of reviewing the situation in the Portuguese fishing trade and industry, particularly with respect to the effect of government regulations. At the end of two months the committee is to recommend measures to assure a more adequate supply and more regular flow of fish to the domestic market, the United States Embassy in Lisbon reported on April 19, 1960.

SwedenLANDINGS OF MACKEREL LIMITED BY POOR MARKET:

The Swedish and Danish markets as of early April were overstocked with mackerel with the result that Swedish fish export organizations have had difficulties in disposing of the landings. Accordingly, effective April 11, 1960, the quantity of mackerel that may be landed in Swedish ports was limited to 25 boxes containing 40 kilos or 88 pounds per man per trip.

Swedish fishermen have for some time caught unusually large quantities of mackerel in trawls in the northern part of the North Sea. This resulted in some fishermen preferring to land their catches in ports in England and Scotland. The mackerel now, however, are moving eastwards which means shorter trips for the fishing vessels from the fishing grounds to Swedish ports. Consequently, it is expected that fishermen will now prefer to land their catches in Swedish ports rather than English and Scottish ports.

A representative of the West Coast Fishermen's Central Society stated that it is difficult to explain the present situation. However, he said there is an evident buying resistance in the case of mackerel at this time of the year, because they do not have the same taste as during the summer months. (United States Consulate dispatch from Goteborg, April 7, 1960.)

\* \* \* \* \*

Sweden (Contd.):

#### RESEARCH VESSEL RESUMES STUDIES ON SPAWNING OF SPRING HERRING:

The Swedish fishery research vessel Eystrasalt left Lysekil on March 15, 1960, for a trip in the Skagerack to investigate the spawning of spring herring along the Swedish coast. Similar investigations have been performed yearly since 1951.

The survey includes water temperature, salinities, supply of plankton, etc. The research vessel will also contact Swedish fishing boats in the area, collecting samples of the herring. The expedition is headed by the Director of the Swedish Fish Laboratory at Lysekil. (United States Consulate dispatch from Goteborg, March 17, 1960.)



#### Union of South Africa

##### STEEL VESSEL OF NEW DESIGN FOR PILCHARD FISHERY:

An all-welded steel vessel (Jakob S.) of unusual design for the pilchard fishery was launched in January 1960 by a Union of South Africa Cape Town shipyard. The vessel was scheduled to be fully completed in a few months.

In basic design and appearance, the vessel differs considerably from the conventional wooden vessel. With her deckhouse and engineroom right aft, she has an extremely spacious hold and, in capacity and performance, may introduce a new high standard to the South African West Coast inshore fishing fleet.

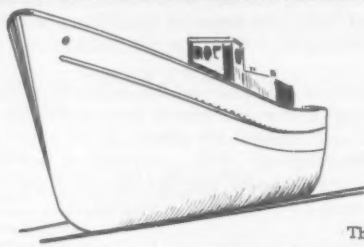
Designed by a South African naval architect, the vessel in size is slightly larger than the largest wooden vessel, measuring 64 ft. 8 in. between perpendiculars, 71 ft. over-all, 24 ft. molded breadth, and a draft of 10 ft. 3 in.

Her engineroom, situated right aft, is given ample space by the wide transom stern.

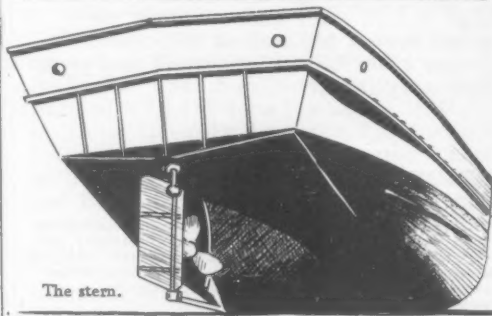
A marine Diesel engine, developing 210/230 b.h.p. at 375 r.p.m., has been

installed. The engine is equipped with a controllable pitch propeller.

In the Jakob S. the normal direct straight-line drive has been modified to meet the requirements for a fish hold of exceptionally large capacity.



The bow.



The stern.

The Jakob S., an all-welded steel vessel of unusual design to be used for pilchard fishing.

The controllable-pitch propeller will be hydraulically controlled direct from the wheelhouse, which is raised above the level of the deckhouse to give all-round vision.

Another feature of the Jakob S. is the provision of hydraulic steering and the first installation in a boat of this type of the hydraulic winch. (The South African Shipping News and Fishing Industry Review, February 1960.)



#### U. S. S. R.

##### FISHERIES IN EAST ASIATIC WATERS:

At the end of 1959 the fisheries in the Soviet Far East (including catching, processing, shipbuilding, and ship repairs) were placed under a central administrative organization, the newly-established



## U. S. S. R. (Contd.):

Directorate for the Fishing Industry in the Far East, usually abbreviated to Glavdalvostokrybprom.

In an interview in Vodnyi Transport for February 9, 1960, the Director of the new agency stated that although it had only been a short time since fishery and fishing industry responsibilities had been transferred from the jurisdiction of the Far East's five regional economic councils to a central administration, it appeared the change was well liked. The reorganization has made it possible for more rational utilization, not only of the fishing fleet, but also of transport vessels, storage warehouses, processing plants, and port installations.

The further development of fishing in the Far East depends on a more intensive expansion of ocean fishing. The Pacific Ocean basin and the oceanic bays north of the Equator have the world's richest fishery resources, where Japan, China, the U. S. S. R., the United States, and Canada fish. The average catch is 7 million metric tons a year. The Soviet fleets have, until recently, conducted a limited fishery for flounders, cod, and fat herring in the waters off Kamchatka, Sakhalin, and the Russian Pacific Ocean coast. Now they are going farther at sea and taking bottomfish and deep-water fish. A large number of vessels are fishing in the southeasterly portion of the Bering Sea. But this is just a beginning. This year there have been set up 6 expeditions for catching various kinds of fish. They will operate in the South China Sea, the East China Sea, the Yellow Sea, the Gulf of Siam, the Bay of Tonkin, Bristol Bay, and the Gulf of Alaska.

In coming years the fisheries of the Far East will get a number of new large and medium trawlers, gill-netters, factoryships for processing herring, canning factoryships for crabs, freezer vessels, and refrigerator ships for transport of fishery products. (Norwegian fishery periodical Fiskets Gang, March 10, 1960.)

\*\*\*\*\*

## FISHING FLEETS NEED OFFICERS AND CREWS:

The vice chairman of the Soviet Murmansk Regional Economic Council has recommended the Murmansk fishing fleet as place of work, according to a report in Karasnaja Zvezda (January 19, 1960), the Defense Ministry's organ for the Soviet Union's Navy. He urged officers and crewmen who were about to go into the reserve to seek employment in the Murmansk fishing fleets where they would find good use for their talents and experience. A second mate in the fishing fleet could earn up to 3,000 rubles (about US\$300) a month.

According to an article in Sovjetskaja Estania on January 17, 1960, a former trawler captain and officer appealed to soldiers and officers, who were about to be demobilized, to seek work in the Estonian fishing fleet which is growing rapidly. (Fiskets Gang, March 24, 1960.)

Note: Value converted at tourist rate of exchange of 10 rubles equal US\$1.



## United Kingdom

## BRITISH FIRM AGREES TO PURCHASE FROZEN FILLETS FROM FAROE ISLANDS:

An agreement for the purchase of all frozen cod and haddock fillets produced by the Faroese trawler owners has been signed by a British firm formed last year. It will be the first time Faroe frozen fillets have been available on the British market, and prices will remain steady even in times of fish shortage, according to a report in a London newspaper, The Guardian of March 7, 1960.

The fillets will be handled on behalf of the trawler owners by a freezing plant in Thorshavn. The freezing industry in the Faroes is still being developed, and refrigerated shipping is rather limited. Large supplies therefore will not be possible at first, but they will gradually increase. The first shipment is expected in August 1960.

\*\*\*\*\*

United Kingdom (Contd.):

**TRAWLERS TO SUPPLY FISH FOR  
U. S. S. R. FROZEN FILLET CONTRACT:**

British distant-water trawler owners have entered into arrangements to supply a fish processing firm with ground-fish to execute contracts this company has concluded with Russia and Czechoslovakia. The contract calls for delivery of 2,500 tons of quick-frozen fillets during the summer. It is understood that the fish-processing firm hopes to complete the contract by the end of June.

Total contracts so far signed between the trawler owners and processors amount to 18,125 long tons. This quantity will be drawn from the fishing ports of Hull, Grimsby, and Fleetwood.

In addition to the above firm, two other processors have signed contracts with the trawler owners. (*Fishing News*, April 1, 1960.)

\*\*\*\*\*

**FISHERY LOANS INTEREST RATES  
INCREASED AS OF MARCH 11:**

The British White Fish Authority (WFA), as a result of a recent increase in the rates of interest charged to them by H. M. Treasury, increased their own rates effective March 11, 1960.

The new rates are:

On loans for not more than five years,  $5\frac{3}{8}$  percent; increase  $\frac{3}{8}$  percent.

On loans for more than five years but not more than 10,  $5\frac{1}{2}$  percent; increase  $\frac{1}{4}$  percent.

On loans for more than 10 years but not more than 15,  $6\frac{1}{8}$  percent; increase  $\frac{1}{8}$  percent.

On loans for more than 15 years, 6 percent; increase  $\frac{1}{8}$  percent.

The new rates do not apply, however, where the final installments in current cases were paid by the Authority before March 14, 1960. The other terms and conditions of the Authority's arrangements for loans are unchanged.

The Authority's loans are connected with the building of new fishing vessels of not more than 140 feet, the purchase, in certain circumstances, of new engines and nets and gear for inshore vessels, the construction and equipment of processing plants, and the formation and development of cooperative organizations. (*The Fishing News*, March 18, 1960.)

\*\*\*\*\*

**NEW STERN TRAWLER PRAISED:**

During a trip to the United Kingdom's west coast fishing grounds, which ended in March 1960, Aberdeen's new stern trawler *Universal Star* fished in very stormy weather when many of the standard trawlers had to give up.

The skipper stated that during a 12 days' trip in very bad weather they made 43 drags, and he had no complaints as the vessel was concerned. He believed that for comfort the *Universal Star* is far ahead of the standard type of trawler. As to seagoing qualities she is said to be steadier than the standard type, and ships no water, for even in the worst of weather it is only spray that comes over her stern.

The real trouble, however, since the vessel started operating late in 1959, has been with her fishing gear. It was found that the ordinary trawling gear as used by the standard trawler was not giving satisfactory results. Considerable adjustments had to be made, but now the skipper believes that they have gear which, given favorable weather conditions, will enable them to get good catches.

Apart from adjustments to the head rope, etc., smaller doors or trawl boards than with the standard gear are being used. The doors are approximately 7 ft. x 3 ft. 6 in., as compared with the standard 10 ft. x 4 ft. The boards used are also only about three-quarters of the weight of the standard type.

A representative of a Canadian firm, one of the largest concerns of its kind with a fleet of some 28 trawlers, visited Aberdeen especially to see the *Universal Star*. He appeared to be impressed with the vessel and with the idea of trawling

United Kingdom (Contd.):

over the stern instead of over the side.  
(The Fishing News, March 18, 1960.)

\*\*\*\*\*

#### PERUVIAN FISH MEAL IMPORTS THREATEN INDUSTRY:

The President of the British Board of Trade has agreed to give consideration to the threat to the British fishing industry by the increasing imports of Peruvian fish meal.

Late in March, the President of the Association of Fish Meal Manufacturers, with other officers and members of the executive committee, met members of the all-party Parliamentary Fisheries' Committee at the House of Commons. The situation was explained to the Committee and the point of view of the British producers of fish meal was stated.

Later, the deputation, accompanied by members of the all-party committee, met with the President of the Board of Trade. It was explained that the amount paid for fish waste had fallen in a few months from £11 (US\$30.80) a ton to £6 (US\$16.80) and the reason was the great increase in Peruvian imports. (Fishing News, April 1, 1960.)



#### Venezuela

##### JAPANESE-VENEZUELAN TUNA FISHING COMPANY PLANS ADDITION TO FLEET:

The Japanese-Venezuelan fishing venture (organized early in 1959) plans to purchase a 300-ton vessel in Japan to add to the present fleet of two 150-ton Japanese tuna vessels. Landings by the firm's two tuna vessels during the last

half of 1959 were valued at US\$130,556, according to a March 25, 1960, item in a Japanese newspaper.



#### Viet-Nam

##### FISHING FLEET INCREASED BY TWO NEW TRAWLERS:


The Viet-Nam fishing company located in Saigon received two new 74-ton fishing trawlers during February 1960. Both were purchased from Japan under the commercial import program at a cost of two million piasters (about US\$51,143 at exchange rate of 35 piasters to US\$1) each.

Both vessels are equipped with cold-storage facilities, radar, and two-way radio to facilitate deep-sea operations out of the Port of Saigon. They were due to begin operations off the coast of Viet-Nam late in February with 14-man crews aboard each vessel. The owner and manager of the fishing company states that he expects each vessel should bring in 25-40 metric tons of fish each trip.

The Saigon fishing company operating the trawlers is the third large fishing company to be formed in Saigon. The other two are companies which have two vessels each and are averaging monthly catches of about 100-120 tons.

In a statement to the press, the fishing company's representative said that his firm, in cooperation with a Japanese engineer, is studying plans towards the establishment in 1961 of a dried fish and fish meal plant. (The United States Embassy, dispatch from Saigon, February 19, 1960.)





# FEDERAL ACTIONS



## Department of Commerce

### COAST AND GEODETIC SURVEY

#### FLEET SAILS TO CHART COASTAL WATERS:

The Coast and Geodetic Survey announced on April 5 that its fleet left various ports for 1960 season assignments. The endless assault by the forces of nature result in never-ending changes in the Nation's coastline; shoals and underwater deposits as well as recent wrecks are constant menaces to navigation. These changes must be located and together with new lights and buoys, must be shown on the Survey's charts.

During the 1960 field season, depending on the area and the weather, information will be gathered concerning depth, tides, currents, seawater-temperature, and salinity. Bottom samples will be obtained by coring, bathythermographs will record temperature against depth, and deep-sea reversing thermometers will be used.

Although the Survey has mapped more than 100,000 linear miles of coast since it was founded in 1807, some of the areas to be surveyed this summer in Alaska have never been charted in detail. Even along our much-traveled Atlantic coast threats to navigation are present.

Coast and Geodetic Survey ships may be distinguished by a flag which has a blue field carrying a white circle in which there is a red triangle. All vessels are painted haze gray. The uniforms of officers and crew resemble those of the U. S. Navy and U. S. Coast Guard, but are distinguished by Survey insignia.



## Federal Trade Commission

#### CRAB FISHERMEN'S ASSOCIATION IN STATE OF WASHINGTON CHARGED WITH RESTRAINT OF TRADE:

The Federal Trade Commission on April 15, 1960, charged (complaint 7859, crabs) that a crab association in Westport, Wash., and its officers, trustees, and approximately 250 crab fishermen members, have unlawfully restrained competition in the \$2-million dungeness crab industry in the State of Washington.

The Commission's formal complaint alleges that since about 1958 they have used coercion in a conspiracy to prevent other dealers from buying or selling processed and unprocessed crabs and to get nonmember crab fishermen to join the association. The coercive methods allegedly used include threats of reprisals, intimidation, and physical violence.

Eleven members are named specifically in the complaint as trustees or officers who direct and control the association's activities and also as representative of the entire membership.

According to the complaint, the Association's main function is to fix prices paid by cannery to members for their catch, and the "Membership Agreement" gives it the power to determine what cannery and crab processors it and the members will deal with. Its members fish for fresh crabs in the coastal waters of Washington and Oregon and in the adjacent ocean. They account for almost the entire catch originating in the former state.

In May 1959, the complaint continues, about 90 of the some 250 association members formed a cooperative, and bought a crab-processing cannery. The cooperative competes with all other crab cannery and processors in marketing its

products. Although the association and cooperative are legally distinct entities, all trustees and officers who control the former's actions are stockholders in the latter. Two are trustees of both organizations and one of these two is manager of the cooperative's cannery and crab-processing operations.

The complaint says the respondents have actual or potential power to monopolize all phases of the crab industry in their area since substantially the same men control the crab fishing fleet through the association, and own or control the cannery cooperative.

Respondents' monopoly power, coupled with the coercive tactics they have employed against other crab dealers and nonmember crabbers, tend to unlawfully destroy competition in fishing for, processing, shipping, selling, and marketing of processed or unprocessed crabs, the complaint charges.

These actions and conspiracy are unfair methods of competition forbidden by Sec. 5 of the Federal Trade Commission Act, the complaint concludes.

The respondents were granted 30 days in which to file answer to the complaint.



## Department of Health, Education, and Welfare

### FOOD AND DRUG ADMINISTRATION

#### ADDITIONAL PETITIONS FILED ON FOOD ADDITIVES:

In the April 8, 1960, Federal Register, the U. S. Food and Drug Administration announced the filing of the following petitions on food additives pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act with reference to those sections dealing with food additives:

A petition has been filed by the Can Manufacturers Institute, Washington, D. C., proposing a regulation to provide

for the use of certain substances in the formulation of organic coatings for food containers coming in direct contact with food. Substances proposed were previously listed as being the subject of extension actions under section 121.87(d) of the Act and were published in the Federal Register of March 17.

A Columbus, Ohio, firm also filed a petition for a regulation permitting the use of sources of radiation to include certain radioactive isotopes producing radiations with energy levels not to exceed 2.2 million electron volts for the purpose of inspection of foods and food packages and for controlling food processes.

\*\*\*\*\*

#### PETITION FILED FOR USE OF RESINS IN FOOD INDUSTRY:

A petition has been filed with the U. S. Food and Drug Administration by a Bartlesville, Okla., firm proposing the issuance of a regulation to permit the use of resins composed of (1) homopolymers of ethylene and (2) copolymers of ethylene and other 1-olefins in packaging, processing, packing, transporting or holding of foods. The notice appeared in the Federal Register of April 5, 1960.

\*\*\*\*\*

#### USE OF SODIUM NITRITE IN CURED TUNA AND PET FOOD EXTENDED:

In an order signed by the Commissioner of the U. S. Food and Drug Administration, effective on March 29, 1960, the use of sodium nitrite was authorized "in Cured Tuna Fish (10 parts per million)" and "in canned pet animal food containing fish and/or meat (20 parts per million)" for a period of 1 year from March 6, 1960, or until regulations shall have been issued establishing or denying tolerances or exemptions from the requirement of tolerances, in accordance with section 409 of the act, whichever occurs first. The Food and Drug Administration states that this order has no bearing on any other variety of fish.





## Department of Interior

### FISH AND WILDLIFE SERVICE

#### SEASON FOR LAND-BASED WHALING FOR BALEEN WHALES CHANGED:

The six-months' season for land-based whaling for baleen whales by United States nationals and whaling enterprises has been changed by the Secretary of the Interior. The change, as it appeared in the *Federal Register* of April 6, 1960, shows the opening date of the season has been advanced two weeks and the closing date has been advanced two weeks. The new season for the taking or killing of blue whales or minke whales with a whale catcher attached to a land station is April 16 to October 15 following, both days inclusive.

The change was requested by the industry to take advantage of relatively better weather conditions during the early spring. Any resulting increase in the take of whales will be too small to affect significantly the conservation of the whale resources.



## International Joint Commission (United States and Canada)

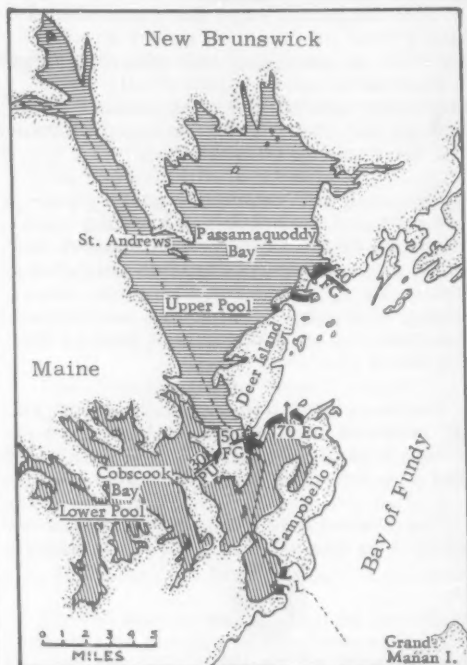
### PASSAMAQUODDY TIDAL POWER PROJECT

#### PUBLIC HEARING:

The International (United States and Canada) Joint Commission conducted a public hearing on April 22, 1960, in Calais, Me., on the Passamaquoddy tidal power project. On August 2, 1956, the Governments of Canada and the United States had requested that the Commission make a joint examination and advisory report, including recommendations and conclusions.

The Commission was asked to determine the estimated cost of developing the international tidal power potential of Passamaquoddy Bay in the State of Maine and the Province of New Brunswick and whether or not hydroelectric power could

be produced at a price which is economically feasible. The Commission also was asked to determine the effects on the local and national economies, and to study specifically the effects which the construction, maintenance, and operation of the tidal power structures might have upon the fisheries of the area.



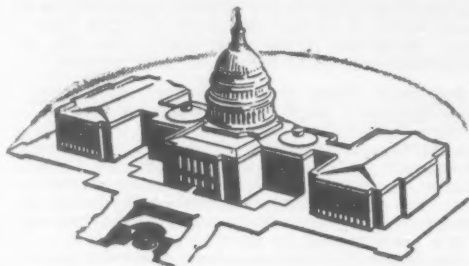
Passamaquoddy Tidal Power Project plan selected for detailed design.

Purpose of the hearing was to receive testimony and evidence on the findings and conclusions as contained in the reports of the International Passamaquoddy Engineering Board and the International Passamaquoddy Fisheries Board. The Fisheries Board has indicated in its report that the effect on the fisheries in Passamaquoddy and Cobscook Bays in Maine and New Brunswick will be only slight.



## Eighty-Sixth Congress (Second Session)

Public bills and resolutions which may directly or indirectly affect fisheries and allied industries are reported. Introduction, referral to Committees,



pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.

**CALIFORNIA FISHING PROBLEMS:** Conference on Northern California Fishing Problems, House Document 370, 86th Congress Second Session, 90 pp., printed. This document is a transcript of a conference held at San Rafael, Calif., in November 1959. It constitutes a symposium of scientific papers and other expert testimony by some two dozen fishery scientists; state fish and game officials from Oregon, Washington, Idaho, and California; and U. S. Fish and Wildlife Service and Bureau of Reclamation officials as well as spokesmen for the commercial and sport fishing industries;-- on the responsibility of government, both State and Federal, to help conserve the valuable resource of the salmon and steelhead fisheries on the Pacific Coast.

**COLOR ADDITIVES IN FOOD:** The House Committee on Interstate and Foreign Commerce on April 5, 1960, held a scientific panel discussion on color additives in food. Related to S. 2197 (Hill and Goldwater), introduced in Senate June 17, 1959.

**CHEMICAL PESTICIDES COORDINATION ACT:** On May 3, 1960, the House Subcommittee of the Committee on Merchant Marine and Fisheries began hearings on H. R. 11502 (Wolf), a bill which was introduced in the House on March 31, 1960, to provide for advance consultation with the Fish and Wildlife Service and with State wildlife agencies before the beginning of any Federal program involving the use of pesticides or other chemicals designed for mass biological controls. On May 4, 1960, the hearings were concluded. Representatives of the Government and various public witnesses were heard. The U. S. Department of Agriculture and the U. S. Public Health Service opposed enactment of H. R. 11502 and the U. S. Fish and Wildlife Service proposed, in lieu thereof, an amendment to the Pesticide Research Act of 1958.

**DISTRICT OF COLUMBIA FISH MARKET:** S. J. Res. 144 (Beall) introduced in Senate on January 11, 1960, joint resolution to authorize the District of Columbia to erect a municipal fish market at the waterfront in Southwest Washington; to the Committee on the District of Columbia.

**FAIR LABOR STANDARDS TRADE ACT:** H. R. 11868 (Osterhag) introduced in the House on April 21, 1960, a bill to provide for adjusting conditions of competition between certain domestic industries and foreign industries with respect to the level of wages and working conditions in the production of articles imported into the United States, to the Committee on Ways and Means. This bill is similar in purpose to S. 2882, H. R. 9481, H. R. 10103, and H. R. 10887, but not identical.

**FISH AND SHELLFISH CONSERVATION:** S. J. Res. 184 (Magnuson), introduced in the Senate on April 7, 1960, a joint resolution to promote the conservation of ocean fish and shellfish; to the Committee on Interior and Insular Affairs. Public hearings were held by the Senate Subcommittee on Merchant Marine and Fisheries, May 13, 1960.

**FISH AND WILDLIFE COOPERATIVE RESEARCH TRAINING UNITS:** S. 1781 (Magnuson), a bill introduced in the Senate on April 23, 1959, was reported by the Committee on Interstate and Foreign Commerce on April 21, 1960 (Rept. No. 1285).

Senate Report No. 1285: Authorizing Continuance of Cooperative Unit Programs of Research and Education Relating to Fish and Wildlife (April 21, 1960, 86th Congress, 2nd. Session, report from the Committee on Interstate and Foreign Commerce to accompany S. 1781), 6 pp., printed. S. 1781, as amended, would continue the authority, now contained in appropriation acts, of the Secretary of the Interior to enter into cooperative agreements with colleges and universities game and fish departments of the States and territories, and with nonprofit organizations relating to cooperative research units. The function would be, among others, to conduct coordinated research by and between Federal, state, and private agencies; to provide for training primarily at graduate levels in the fields of fisheries and wildlife management; to maintain effective liaison between Federal, state, and private agencies relating to fish and wildlife resources of mutual interest and benefit to more than one state, including species of interest to citizens of States lacking them, and for other purposes wherein cooperative activities would offer benefits and promise of greater success at reduced costs.

The Senate on May 4 passed S. 1781 as amended. This is primarily a sport fisheries and wildlife bill. A wildlife spokesman stated the major purpose of this bill as "putting a statutory base" under the cooperative Federal-state wildlife education program which has been in effect for several years.

**FISHERIES ASSISTANCE ACT OF 1959:** On May 3, 1960, the Senate adopted a unanimous conference report of both Houses on H. R. 5421 (McDonald), a bill to provide a program of assistance to correct inequities in the construction of fishing vessels and to enable the fishing industry of the

United States to regain a favorable economic status, and for other purposes. On May 4, 1960, a conference report (Rept. No. 1589) and statement was filed. On May 5, 1960, Lausche filed a motion in the Senate to reconsider action of the Senate taken on May 3, in adopting conference report on H. R. 5421.

H. Rept. No. 1589, Providing a Program of Assistance for the Construction of Fishing Vessels (May 4, 1960, 86th Congress, Second Session, conference report from the Committee of Conference to accompany H. R. 5421), 7 pp., printed. The Committee of Conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill, agreed to and recommended Senate amendments that would require the vessels be suitable for defense purposes, aid in developing the U. S. fisheries, deliver their catch to U. S. ports, employ citizens of the United States or legally domiciled aliens, and be documented under U. S. laws. Section 4 of the House bill provides that a construction subsidy shall be granted under the act only to assist in the construction of a fishing vessel to be operated in a fishery suffering injury from which escape clause relief had been recommended by the Tariff Commission under the Trade Agreements Assistance Act of 1951, as amended, where such relief has been or is hereafter denied under section 7(c) of such Trade Agreements Assistance Act of 1951. The Senate amendment contained no comparable provision. The proposed conference substitute contains the same condition as provided in section 4 of the House bill with the addition that construction subsidies may also be granted to vessels to be operated in a fishery found by the Secretary to be injured or threatened with injury by reason of increased imports, either actual or relative, of a fish or shellfish product, not the subject of a trade agreement tariff concession, which is like or directly competitive with the fishery's product, and to vessels to be operated in a fishery found by the Secretary to be injured or threatened with injury by reason of increased imports, either actual or relative, of a fish or shellfish product that is provided for in the Free List of the Tariff Act of 1930, whether or not subject to a trade agreement tariff concession. Agreed to Senate amendments excluding the cost of defense features from the 33½ percent construction subsidy, and to require that they be paid by the Department of Defense rather than Interior; and that plans for the vessels are to be submitted to Department of Defense for approval. The House authorized \$1 million to be appropriated annually; the Senate \$5 million--the Committee agreed upon \$2,500,000. The Committee accepted the Senate amendment which provided that no application for construction could be accepted after 3 years from the effective date. Contains statement of the managers on the part of the House.

HARBORS: Gulf Coast Shrimp Boat Harbors, Florida, House Document No. 183, 86th Congress, 1st Session (Letter from the Secretary of the Army transmitting a letter from the Chief of Engineers, Department of the Army, dated May 22, 1959, submitting a report, together with accompanying papers and illustrations, on a review of reports on and surveys of Gulf Coast shrimp boat harbors, Florida, requested by resolutions of the Committee on Rivers and Harbors, House of Representatives, and the Committee on Public Works, United States

Senate, adopted June 28, 1946, and February 14, 1950, also submitted in response to five other Congressional authorizations listed in the report), 45 pp., 2 charts, printed. Harbors reported on are Venice, Lemon Bay, Fort Myers Beach, and Naples.

Monterey Bay, California, House Document No. 219, 86th Congress, 1st Session (Letter from the Secretary of the Army transmitting a letter from the Chief of Engineers, Department of the Army, dated July 15, 1959, submitting a report, together with accompanying papers and an illustration, on a survey of Monterey Bay (Monterey Harbor), California, authorized by the River and Harbor Act, approved March 2, 1945), 107 pp., 1 chart, printed.

Snohomish River (Everett Harbor), Washington House Document No. 349, 82nd Congress, Second Session (Letter from the Secretary of the Army transmitting a letter from the Chief of Engineers, Department of the Army, dated January 27, 1960, submitting a report, together with accompanying papers and illustrations, on a review of reports on Snohomish River (Everett Harbor), Wash., requested by a resolution of the Committee on Public Works, House of Representatives, adopted July 19, 1956), 70 pp., 3 illustrations, printed.

INTERNATIONAL LABOR ORGANIZATION: Conventions and Recommendation Adopted by the International Labor Conference at Its Forty-Third Session at Geneva, House Document No. 365, 86th Congress, Second Session (Letter from the Assistant Secretary of State, dated March 30, 1960, transmitting texts of the following: (1) ILO Convention (No. 112) concerning the minimum age for admission to employment as fishermen, (2) ILO Convention (No. 113) concerning the medical examination of fishermen, and (3) ILO Recommendation (No. 112) concerning occupational health services in places of employment, adopted by the International Labor Conference at its forty-third session, at Geneva, June 19, 1959, pursuant to article 19 of the constitution of the ILO), 24 pp., printed. Contains statements by Federal agencies on and the texts of the conventions indicated.

HAWAIIAN OMNIBUS ACT: H. Report No. 1564, Amending Certain Laws of the United States in Light of the Admission of the State of Hawaii into the Union (May 2, 1960, 86th Congress, Second Session, report from the Committee on Interior and Insular Affairs to accompany H. R. 11602), 71 pp., printed. This bill, introduced April 6, 1960 (Inouye), amends certain laws of the United States in light of the admission of the State of Hawaii into the Union, and for other purposes. H. R. 11602 was introduced by Inouye after hearings on five predecessor bills H. R. 10434 (Aspinhill), H. R. 10443 (Inouye), H. R. 10456 (O'Brien), H. R. 10463 (Saylor), and H. R. 10475 (Westland). Includes the amendments agreed upon in committee when H. R. 10443 was marked up. All predecessor bills except H. R. 10443 were identical. Section 12 contains perfecting amendments to the statute, which authorizes the Secretary of the Interior to undertake exploration, investigation, development, and maintenance projects for fishery resources in the Pacific. Inappropriate references to the "Territory" of Hawaii and to the "Hawaiian Islands" would be deleted or modified by the amendments. Section 13 provides a perfecting amendment to section 2(d) of the Fish Restoration Act, to remove the definition of the term

"State." The term is defined by existing law to include the States and the Territory of Hawaii.

The Committee reported favorably on H. R. 11602, without amendment, and recommended that the bill be passed.

#### INTERIOR DEPARTMENT APPROPRIATIONS:

On May 2, 1960, the House disagreed to Senate amendments on H. R. 10401, a bill making appropriations for the Department of the Interior and related agencies for the fiscal year ending June 30, 1961, and for other purposes: agreed to a conference requested by the Senate, and appointed conferees.

On May 3, 1960, the House filed a conference report (Rept. No. 1571) on H. R. 10401 (Kirwin). Amendment No. 24 concerns the Bureau of Commercial Fisheries: Appropriations \$6,591,000 for management and investigations of resources instead of \$7,051,000 as proposed by the Senate and \$6,249,000 as proposed by the House. The increase provided over the House bill is for the following: Pesticides research; \$67,000; industrial fisheries research (menhaden, sardines, and herring), \$175,000; South Atlantic exploratory fishing and gear development program \$100,000. In addition, the conferees directed that \$60,000 be made available for this latter program from Saltonstall-Kennedy funds to make a total of \$160,000 available during fiscal year 1961. The \$400,000 recommended by Senate Committee on appropriations for tuna fisheries investigations was disallowed by the Conference Committee.

On May 5, 1960, the House adopted by a voice vote the conference report on H. R. 10401, and sent the legislation to the Senate. Two Senate amendments were reported in disagreement on which the House voted to recede and concur therein.

LAW OF THE SEA CONVENTIONS: On April 27, 1960, the Committee on Foreign Relations submitted favorable reports on four conventions and a protocol on the law of the sea (Executive Report 5), 86th Congress, 1st Session, as follows: Convention on the Territorial Sea, and the Contiguous Zone (Ex. J); Convention on the High Seas (Ex. K); Convention on Fishing and Conservation of the Living Resources of the High Seas (Ex. L); Convention on the Continental Shelf (Ex. M); and Optional Protocol of Signature Concerning Compulsory Settlement of Disputes (Ex. N), all signed on behalf of the United States at Geneva on September 15, 1958.

SALMON IMPORT RESTRICTIONS: Hearings by the Senate Subcommittee on Merchant Marine and Fisheries were held on May 13, 1960, on S. 502 (Bartlett, Gruening, and Magnuson), introduced into the Senate on January 29, 1959, a bill to facilitate the application and operation of the Fish and Wildlife Act of 1956, and for other purposes. Would prohibit the import of salmon products derived from fish caught by nationals of any country that permits fishing for salmon by gill nets on the high seas at times and places where occur large quantities of immature salmon of North American origin.

SEAWEED (GROUND, POWDERED, OR GRANULATED) ON FREE IMPORT LIST: On April 4, the President signed H. R. 5887 (Keith), a bill to

place ground, powdered, or granulated seaweeds on the free import list under Tariff Act of 1930 (P. L. 86-402).

#### SECOND SUPPLEMENTAL APPROPRIATIONS:

On April 5, 1960, conferees met and agreed to file a conference report on the differences between the Senate- and House-passed versions of H. R. 10743, second supplemental appropriations for fiscal 1960 (H. Rept. No. 1452). Includes for Fish and Wildlife Service Bureau of Commercial Fisheries an increase of \$55,000 to modify and improve docking facilities at Technological Laboratory, Pascagoula, Miss.

On April 6, 1960, the House adopted the conference report on H. R. 10743 by voice vote, and sent legislation to the Senate. April 7, 1960, the Senate adopted conference report and cleared for the White House. Bill was signed by the President April 13, 1960 (P. L. 86-424).

SHELLFISHERIES RESEARCH CENTER: H. R. 11515 (Gialmo), introduced in the House on April 4, 1960, a bill to provide for the construction of a shellfisheries research center at Milford, Conn.; to the Committee on Merchant Marine and Fisheries. The research center, estimated to cost \$1,325,000, would promote the culture of clams and oysters. Identical bills were introduced as follows: H. R. 11721 (Kowalski), introduced in House on April 12, 1960; S. 3392 (Bush and Dodd) introduced in Senate on April 20, 1960; and H. R. 11873 (Irwin), introduced in House on April 21, 1960.

SHRIMP IMPORT BILL: On March 28, the names of Senators Johnston (S. C.), Sparkman (Ala.), Thurmond (S. C.), and Byrd (Va.), were added as sponsors of S. 3204, a bill to amend Tariff Act of 1930 to provide for establishment of country-by-country quotas for importation of shrimp and shrimp products, to impose a duty on all unprocessed shrimp imported in excess of the applicable quota, and to impose a duty on processed shrimp and prohibit its importation in excess of the applicable quota.

STATE DEPARTMENT APPROPRIATIONS: H. R. 11686 (Rooney), introduced in House on April 8, 1960, a bill making appropriations for the Departments of State and Justice, the Judiciary, and related agencies for the fiscal year ending June 30, 1961, and for other purposes; referred to the Committee on Appropriations. Reported on the same date (H. Rept. No. 1467) and referred to Committee of the Whole House on the State of the Union. A portion of the State Department appropriation is for the international fisheries commissions, which number nine this year, with the addition of the New Tortugas Shrimp Commission.

Department of State, and Justice, the Judiciary, and Related Agencies Appropriations for 1961 (Hearings before the Subcommittee of the Committee on Appropriations, House of Representatives, 86th Congress, Second Session), 1171 pp., printed. Contains budget estimates and testimony presented by witnesses and representatives of the Department of State and other agencies in connection with State Department appropriations for fiscal year 1961. Included are funds for the international fisheries commissions (pp.



1002-1109) to enable the United States to meet its obligations in connection with participation in nine such commissions (including the new Tortugas Shrimp Commission) pursuant to treaties of conventions, and implementing Acts of Congress.

H. Report No. 1467, Departments of State and Justice, the Judiciary, and Related Agencies Appropriations Bill, Fiscal Year 1961 (April 8, 1960, 86th Congress, Second Session, report from the Committee on Appropriations to accompany H. R. 11666), 29 pp., printed. Contains explanation of H. R. 11666. The sum of \$1,875,000 (a reduction of \$50,000 in the amount of the budget request, and an increase of \$150,000 over the appropriation for the present fiscal year), is included in the bill for international fisheries commissions. These funds are used for payment of the United States' share of the expenses of nine international fisheries commissions. The commissions conduct studies of determine measures necessary for the preservation and expansion of fishery stocks. In addition, the Halibut and Salmon Commissions regulate the fisheries under their jurisdiction, and in the Great Lakes that Commission carried on a lamprey control program. Included in the international fisheries commissions is the new Tortugas Shrimp Commission.

TARIFF NEGOTIATIONS: On May 6, 1960, Collier introduced in the House H. Con. Res. 687,

a concurrent resolution expressing the sense of Congress that the United States should not grant further tariff reductions in the forthcoming tariff negotiations under the provisions of the Trade Agreements Extension Act of 1958, and for other purposes; to the Committee on Ways and Means. This concurrent resolution is identical to H. Con. Res. 688 (Moeller), introduced in House on May 6, 1960, and about 32 other concurrent resolutions introduced in House and Senate January 25-May 6, 1960.

UNEMPLOYMENT RELIEF IN DEPRESSED AREAS: On May 4, 1960, the chairman of the House Committee on Banking and Currency, called up for consideration S. 722 (Douglas and 38 other Senators, which was introduced in the Senate January 27, 1959, and passed March 23, 1959), a bill to establish an effective program to alleviate conditions of substantial and persistent unemployment and underemployment in certain economically depressed areas. A committee amendment was adopted that supplied new text for the Senate bill and recommended that this Act be known as the "Area Redevelopment Act." The new language would reduce the authorization to \$251 million in lieu of \$379,500,000.

On May 9, 1960, the Secretary of the Senate reported that he had presented S. 722 to the President for signature.



#### HERRING SEROLOGICAL SCOPE WIDENS

As part of the attempt at the Boothbay Harbor station of the U. S. Bureau of Commercial Fisheries to characterize herring populations serologically, recent work has been concentrated on a second blood group system in this species. During December 1959 a large sample of herring was collected from the New Jersey coast to explore this system more thoroughly. It appears to be analogous to the Rh system in humans in that there are several closely related cell antigens involved. It is hoped that with this new tool further information about the population structure of herring may be gained, once quantitative studies have been made.

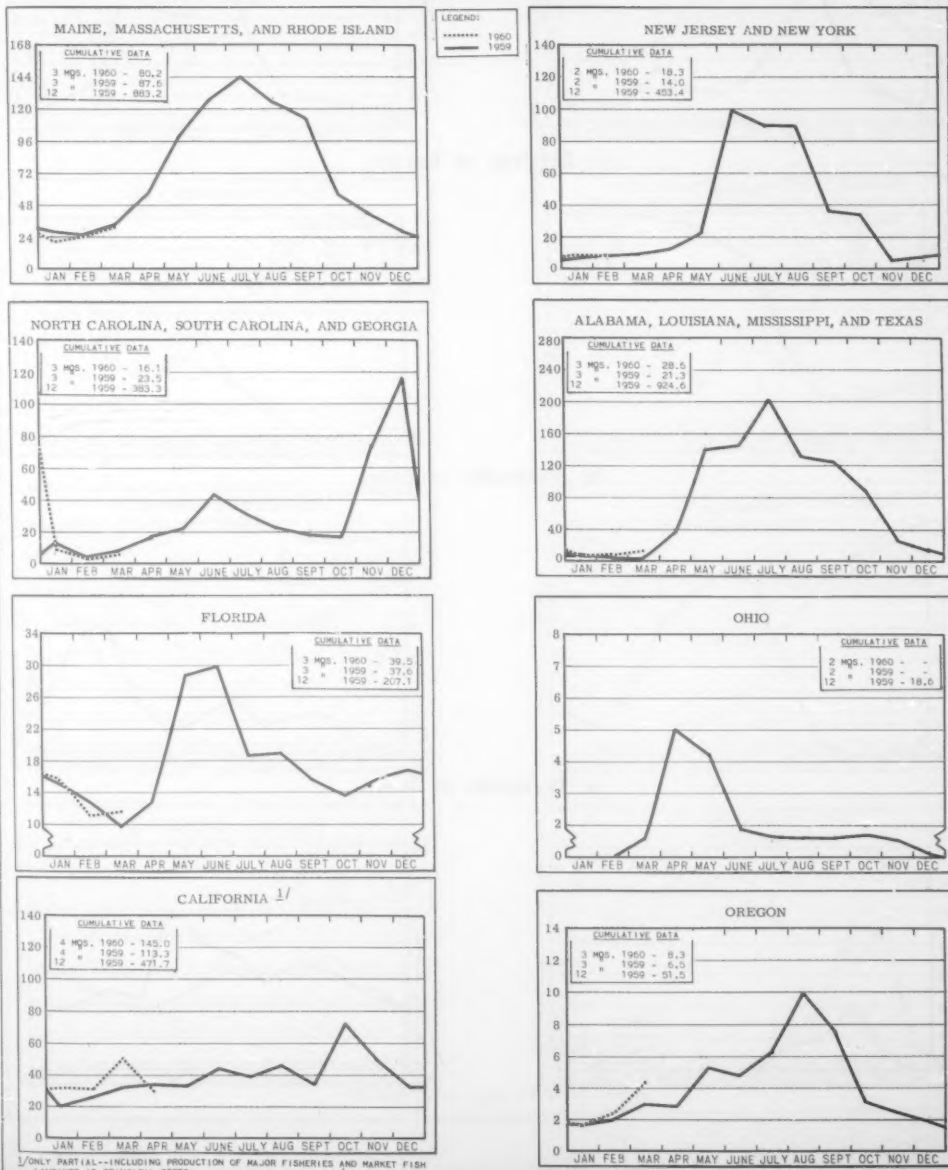
Large numbers of blood samples from four other clupeoids in addition to herring were also obtained from the New Jersey coast, with which interspecies serological comparisons will be continued, to provide a basis for comparisons of intraspecies groups of herring. Working with cell antigens and serum proteins and using several techniques with each, a good picture has been obtained of the relationships of herring, shad, menhaden, alewives, and blueback, and a quantitative measure of the relative "serological distances" that separate each from the other, and this information will be of help in evaluating differences among herring populations.



# FISHERY INDICATORS

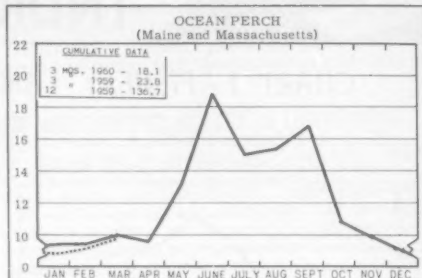
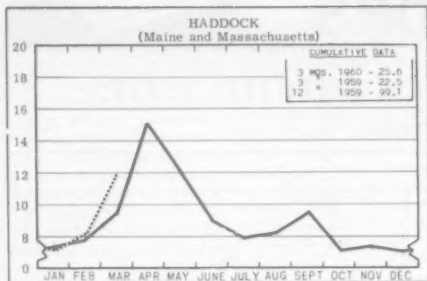
## CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds

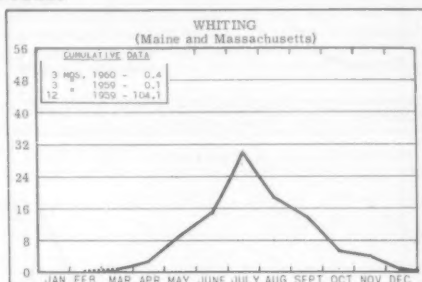
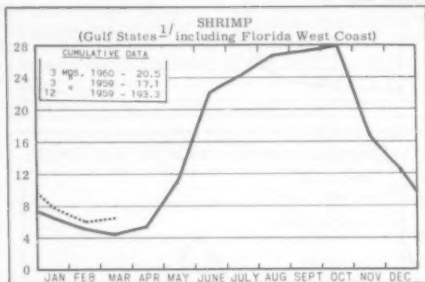


## CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

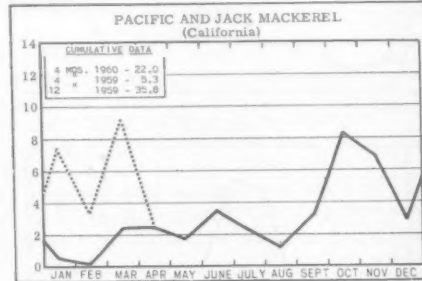
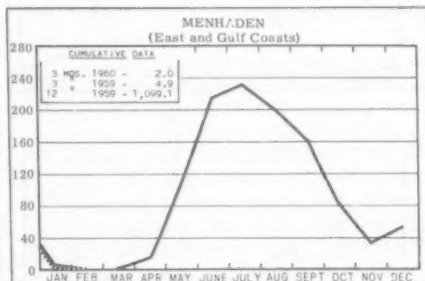


In Millions of Pounds

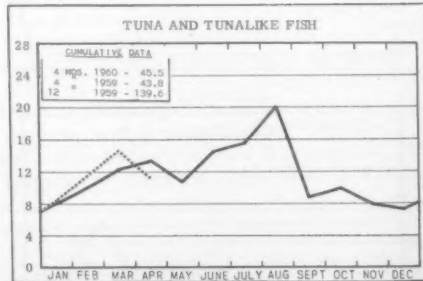
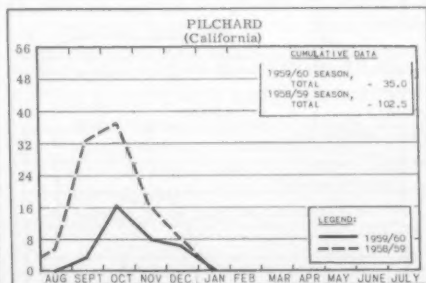


<sup>1/</sup>LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons

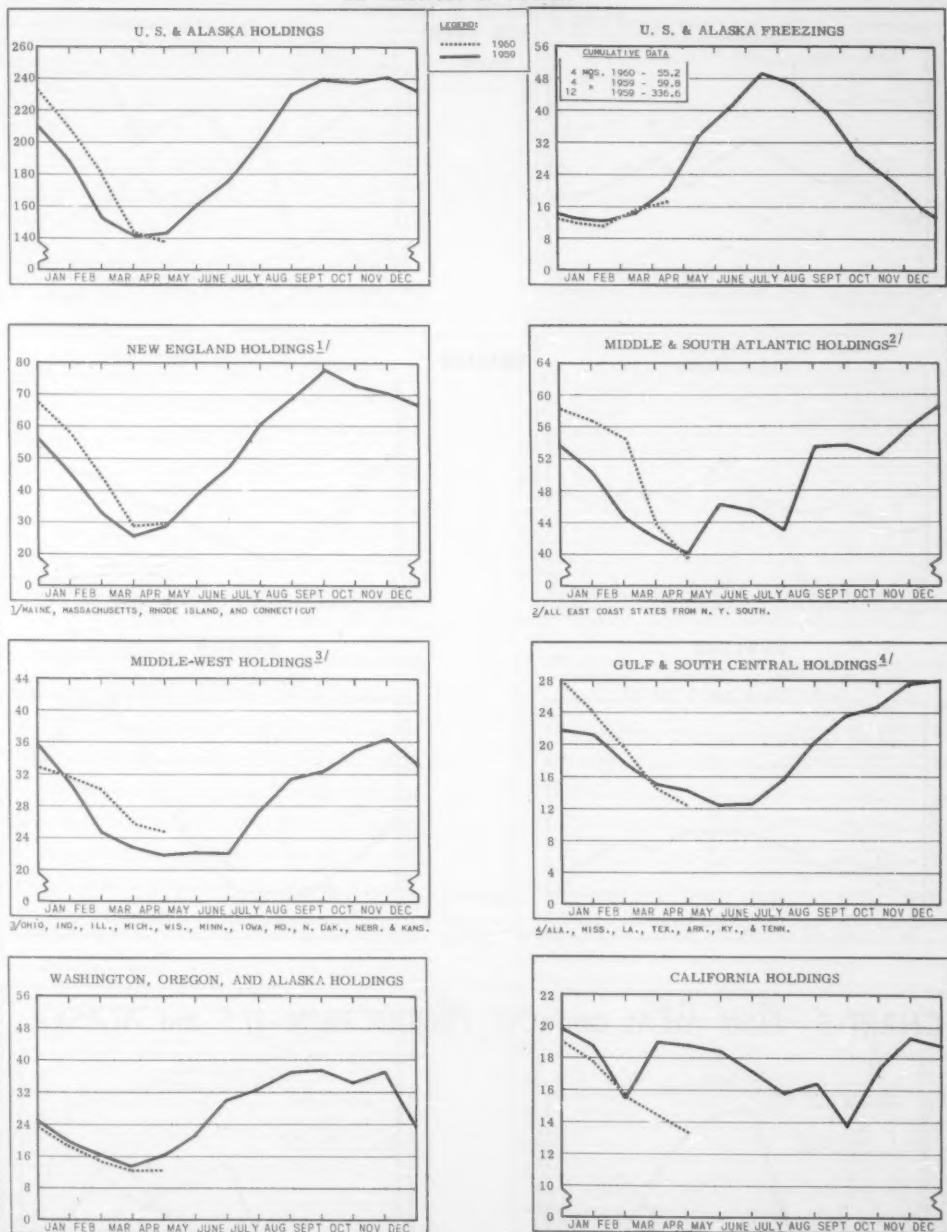


In Thousands of Tons



# CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS \*

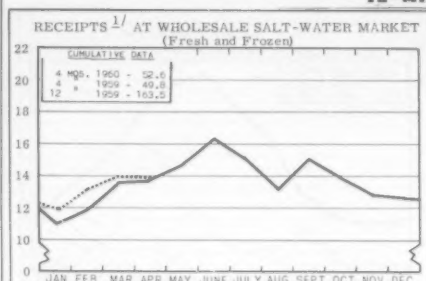
In Millions of Pounds



\* Excludes salted, cured, and smoked products.

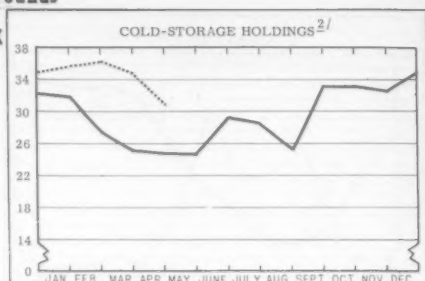
# CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

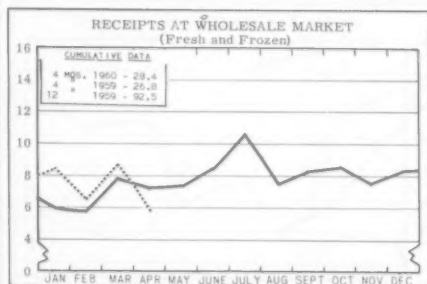


<sup>1/</sup>INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

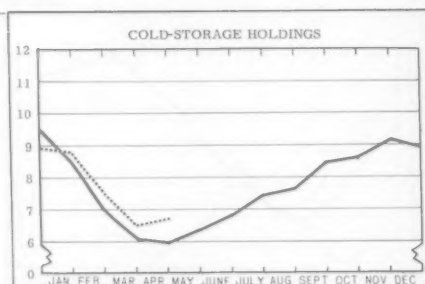
## NEW YORK CITY



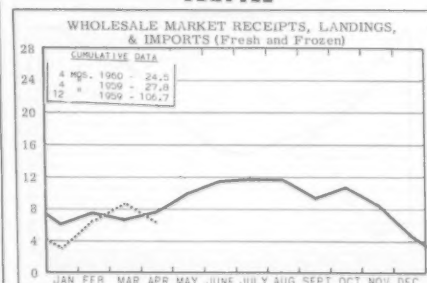
<sup>2/</sup>AS REPORTED BY PLANTS IN METROPOLITAN AREA.



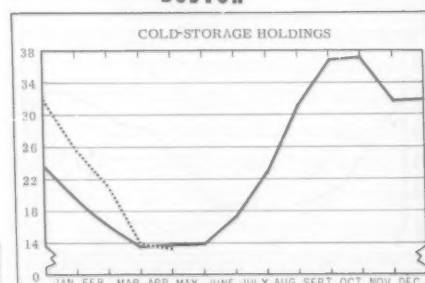
## CHICAGO



## SEATTLE

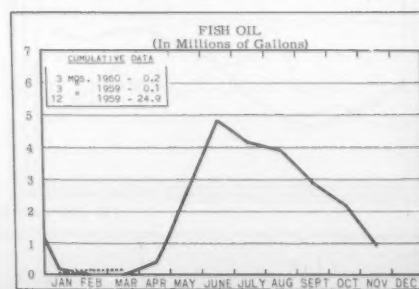
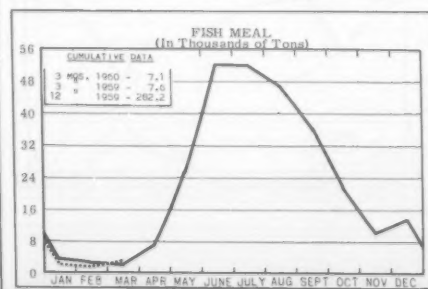


## BOSTON



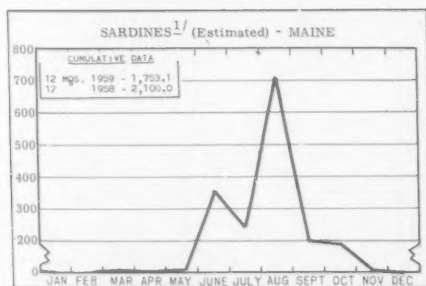
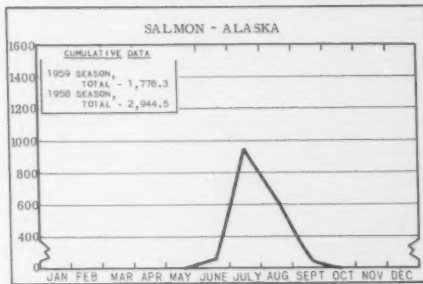
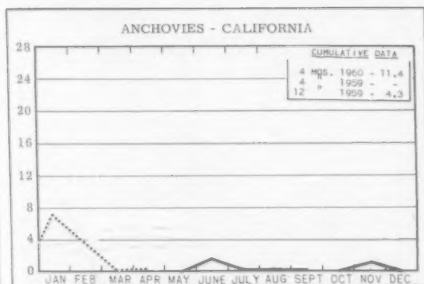
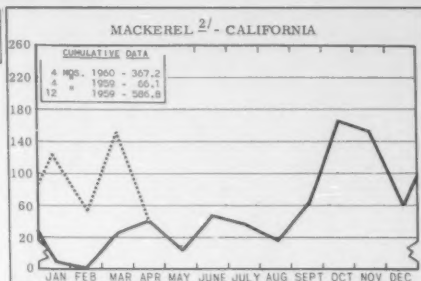
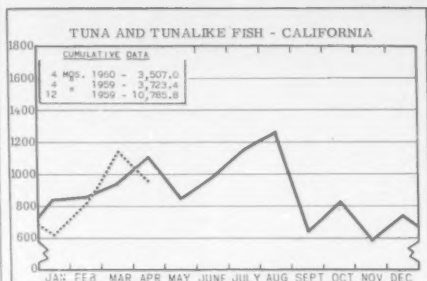
LEGEND:  
..... 1960  
———— 1959

# CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA



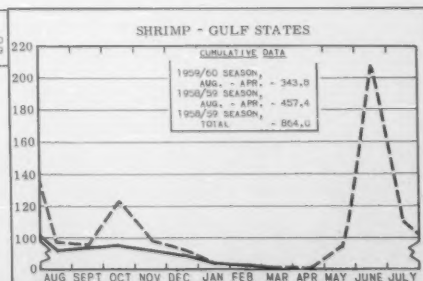
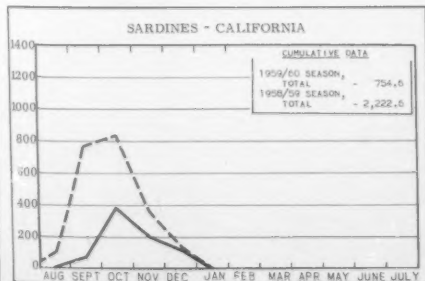
# CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



## STANDARD CASES

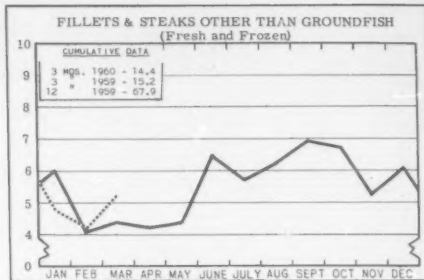
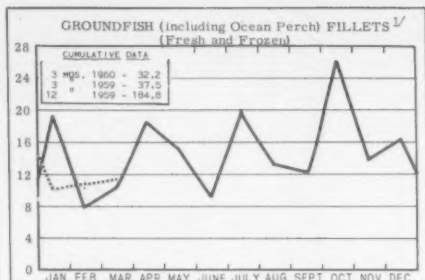
Variety	No. Cans	Designation	Net Wgt.
SARDINES....	100	$\frac{1}{2}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	$\frac{1}{2}$ -lb.	8 oz.



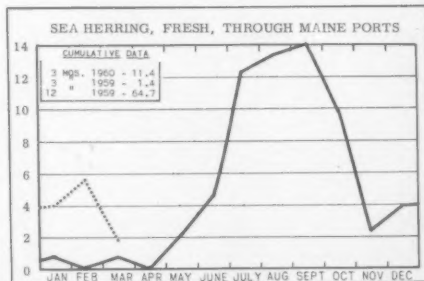
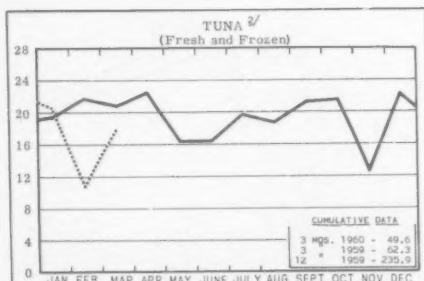
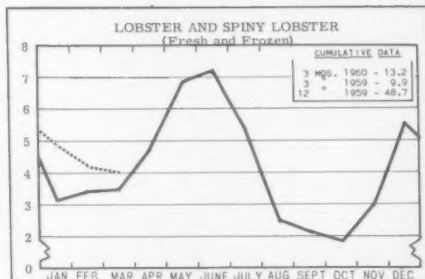
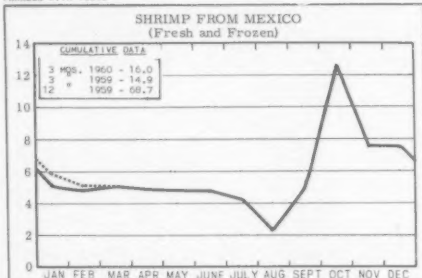


# CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

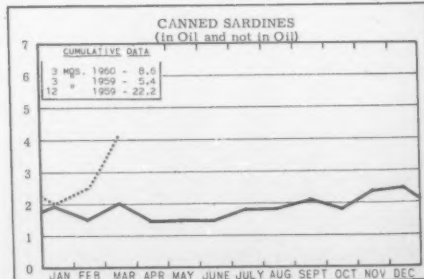
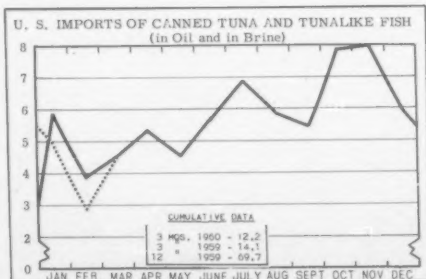
In Millions of Pounds

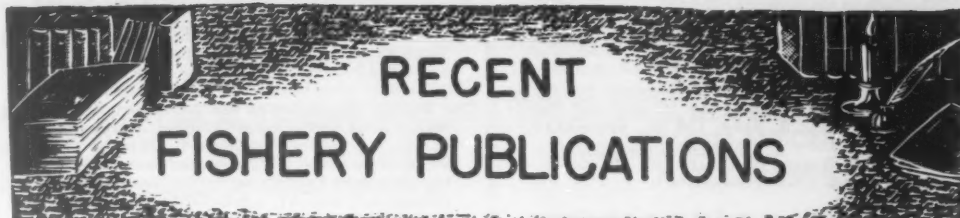


<sup>1/</sup>SINCE SEPTEMBER 15, 1959, FISH FILLET BLOCKS ARE CLASSIFIED UNDER A DIFFERENT CATEGORY THAN FILLETS; THEREFORE, 1959 DATA ARE NO LONGER COMPARABLE WITH 1958.



<sup>2/</sup> EXCLUDES LOINS AND DISCS.





# RECENT FISHERY PUBLICATIONS

## FISH AND WILDLIFE SERVICE PUBLICATIONS

THE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.  
FL - FISHERY LEAFLETS.  
SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-2243	- Fish Meal and Oil, January 1960, 2 pp.
CFS-2245	- Massachusetts Landings, December 1959, 5 pp.
CFS-2247	- North Carolina Landings, 1959 Annual Summary, 6 pp.
CFS-2248	- Frozen Fish Report, February 1960, 8 pp.
CFS-2251	- Maine Landings, 1959 Annual Summary, 6 pp.
CFS-2253	- South Carolina Landings, 1959 Annual Summary, 4 pp.
CFS-2257	- Packaged Fish, 1959 Annual Summary, 5 pp.
CFS-2258	- Georgia Landings, 1959 Annual Summary, 4 pp.
CFS-2259	- Rhode Island Landings, 1959 Annual Summary, 7 pp.
CFS-2263	- California Landings, November 1959, 4 pp.
CFS-2267	- Rhode Island Landings, January 1960, 3 pp.
CFS-2269	- Mississippi Landings, December 1959, 2 pp.
CFS-2270	- New York Landings, January 1960, 4 pp.
CFS-2271	- Shrimp Landings, December 1959, 6 pp.
CFS-2272	- Fish Meal and Oil, February 1960, 2 pp.
CFS-2273	- Canned Fish and Byproducts, 1959 Annual Summary, 21 pp.
CFS-2274	- Texas Landings, January 1960, 3 pp.
CFS-2275	- Washington Landings, 1959 Annual Summary, 2 pp.
CFS-2276	- Virginia Landings, February 1960, 3 pp.
CFS-2277	- Maryland Landings, February 1960, 3 pp.
CFS-2278	- Louisiana Landings, October 1959, 2 pp.
CFS-2279	- South Carolina Landings, February 1960, 2 pp.
CFS-2280	- North Carolina Landings, February 1960, 3 pp.

CFS-2281	- California Landings, December 1959, 4 pp.
CFS-2282	- Mississippi Landings, 1959 Annual Summary, 3 pp.
CFS-2283	- Georgia Landings, February 1960, 2 pp.
CFS-2284	- Mississippi Landings, January 1960, 2 pp.
CFS-2285	- New Jersey Landings, February 1960, 3 pp.
CFS-2287	- Florida Landings, February 1960, 6 pp.
CFS-2288	- Maine Landings, February 1960, 3 pp.
CFS-2293	- Rhode Island Landings, February 1960, 3 pp.

FL.No. 336rr - Commercial Fisheries Outlook, April-June 1960, 44 pp.

Sep. No. 587 - Processing and Quality Studies of Shrimp Held in Refrigerated Sea Water and Ice: Part 3 - Holding Variables and Keeping Quality of Raw Whole Shrimp.

Sep. No. 588 - Research in Service Laboratories (May 1960): Contains this article--"Technical Note No. 55 - Recommended Practices for Processing Chilled and Frozen Whiting."

Sep. No. 589 - Equipment Note No. 3 - New Diving Sled for Underwater Photography.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-13	- India's Fisheries.
MNL-16	- Shippers and U. S. Consignees of Peruvian Fish Meal Shipments, 1959.

THE FOLLOWING ENGLISH TRANSLATIONS OF FOREIGN LANGUAGE ARTICLES ARE NOT FOR GENERAL DISTRIBUTION BUT ARE AVAILABLE FOR REFERENCE ONLY FROM THE U. S. FISH AND WILDLIFE SERVICE, BUREAU OF COMMERCIAL FISHERIES, BIOLOGICAL LABORATORY, BOOTHBAY HARBOR, MAINE.

The Acclimatization of Lobsters in the U. S. S. R., by L. G. Vinogradov and A. A. Neyman, 7 pp., processed. (Translated from Zoologicheskii Zhurnal, vol. 38, no. 2, 1959, pp. 182-188.)

The Beginning of Active Feeding in Larvae of the Sakhalin Herring (CLUPEA HARENGUS PALASI Val.), by I. V. Nikitinskaya, 4 pp., processed. (Translated from Zoologicheskii Zhurnal, vol. 37, no. 10, 1958, pp. 1568-1571.)

The Behavior of Fishes in an Electric Field and Their Protection during Hydraulic Construction, by L. M. Nusenbaum, 10 pp., processed. (Translated from Trudy Soveshchaniy po Fiziologii Ryb, no. 8, 1958, pp. 132-141.)

- Blood Cells in Developing Salmon, by I. N. Ostroumova, 7 pp., processed. (Translated from Trudy Soveshchaniy po Fiziologii Ryb., no. 8, 1958, pp. 380-386.)
- On the Causes of the Similarity Between the Fauna in the Northern Parts of the Atlantic and Pacific Oceans, by L. S. Berg, 108 pp., processed. (Translated from Bulletin de l'Academie des Sciences de Russie (Russian), vol. 21, no. 8, May 1918, pp. 1835-1942.)
- Concerning the Systematic Position of the White Sea Herring, by A. I. Rabinerson, 2 pp., processed. (Translated from Annals of the State Institute for Experimental Agronomics, vol. 1, no. 3, 1923, pp. 106-107.)
- Conference on Problems Concerning the North Atlantic Herring Fisheries, 1 p., processed. (Translated from Rybnoe Khoziaistvo (Russian), vol. 34, no. 9, 1958, p. 94.)
- Data on the Fecundity of the Belomorsky Herring, by O. P. Antipova, 2 pp., processed. (Translated from Annals of the State Institution for Experimental Agronomics (Russian), vol. 6, no. 3-4, 1928, pp. 113-114.)
- Effect of Oceanographic and Meteorological Conditions on the Concentrations of Kandalaksha and Onega Herring, by V. M. Nadezhin, 15 pp., processed. (Translated from Zoologicheskii Zhurnal (Russian), vol. 38, no. 2, 1959, pp. 228-242.)
- The Fecundity of White Sea Herring, by E. A. Bezrukova, 5 pp., processed. (Translated from Zoologicheskii Zhurnal (Russian), vol. 17, no. 1, 1938, pp. 175-179.)
- The Fishery for Kiljka (Sprat) with Fish Pump, Combined with Underwater Light and Impulse Current, by P. V. Nilonorov and A. Kh. Patejev, 6 pp., processed. (Translated from Rybnoe Khoziaistvo, no. 7, June 1959, pp. 53-58.)
- Fishes' Reaction to Electric Current, by N. V. Bodrova and B. B. Krayukhin, 8 pp., processed. (Translated from Trudy Soveshchaniya po Fiziologii Ryb., no. 8, 1958, pp. 124-131.)
- Fluctuations in the Stock of Hokkaido Spring Herring. I--Mean Age Composition, by Tomokichi Yoshihara, 4 pp., processed. (Translated from Bulletin of the Japanese Society of Scientific Fisheries, vol. 19, no. 7, 1953, pp. 828-831.)
- Fluctuations in the Stock of Hokkaido Spring Herring. II--Net Reproduction Rate, by Tomokichi Yoshihara, 4 pp., processed. (Translated from Bulletin of the Japanese Society of Scientific Fisheries, vol. 19, no. 7, 1953, pp. 832-835.)
- Immunological Reaction in Fishes, B. G. Avetikyan, 6 pp., processed. (Translated from Trudy Soveshchaniya po Fiziologii Ryb. (Russian), no. 8, 1958, pp. 387-392.)
- Investigating the Blood of Mature Kura Salmon and Their Young, by B. M. Drabkina, 8 pp., processed. (Translated from Trudy Soveshchaniya po Fiziologii Ryb., no. 8, 1958, pp. 372-379.)
- Some Information on the Distribution of Mature and Immature Atlantic-Scandinavian Herring, by S. S. Fedorov, 4 pp., processed. (Translated from Fiskets Gang (Norwegian), no. 43, October 22, 1959, pp. 593-596.)
- The Secular Variation of the Total Length of Spring Herring CLUPEA HARENGUS C. et V. in the Western Coast of Hokkaido, by Hitoshi Kitahama, 6 pp., processed. (Translated from Bulletin of the Japanese Society of Scientific Fisheries (Japanese), vol. 21, no. 8, 1955, pp. 915-920.)
- On the Sprat's Reaction to Light, by A. A. Lovetskaya, 3 pp., processed. (Translated from Trudy Soveshchaniy po Fiziologii Ryb., no. 8, 1958, pp. 121-123.)
- On the Stock of Atlantic-Scandinavian Herring, by J. J. Marti, 4 pp., processed. (Translated from Fiskets Gang, no. 38, September 17, 1959, pp. 522-525.)
- On the Stock of Spring Herring in Hokkaido, by Morisaburo Tauchi, 3 pp., processed. (Translated from Bulletin of the Japanese Society of Scientific Fisheries, vol. 13, no. 5, 1948, pp. 207-209.)
- On the Variability of the Larvae of the Sakhalin Herring, by L. V. Nikitinskaya, 6 pp., processed. (Translated from Nauchnye Doklady Vyshey Shkoly, Biologicheskii Nauki (Russian), no. 4, 1958, pp. 31-36.)
- Standardizing Methods of Biological Research in the North Atlantic, by A. S. Polonshiy, 4 pp., processed. (Translated from Rybnoe Khoziaistvo, vol. 34, no. 9, 1958, pp. 6-9.)
- State of the Stock and Outlook for the Catches of Baltic Herring, by L. A. Rannak, 4 pp., processed. (Translated from Rybnoe Khoziaistvo, vol. 34, no. 10, 1958, pp. 13-16.)
- A Study of the Causes of Diurnal Vertical Migrations in Fishes, by S. G. Zusser, 6 pp., processed. (Translated from Trudy Soveshchaniya po Fiziologii Ryb., no. 8, 1958, pp. 115-120.)

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

Branch of Exploratory Fishing and Gear Research, Region 3 Activities, 17 pp., illus., processed. (Exploratory Fishing Base, U. S. Bureau of Commercial Fisheries, State Fish Pier, Gloucester, Mass.) Describes Bureau activities in exploratory fishing and gear research in the North Atlantic area. These activities are designed to facilitate the harvesting of our marine resources. Current knowledge of fish populations indicate that great as are landings in this area at present, they do not even approach the known limits of the resource. This booklet outlines the work of the Bureau's research vessels in locating new fishing grounds, estimating seasonal availability and migrations of commercial species, introducing more efficient methods of landing fish and shellfish, and developing new equipment. Several photos show scenes aboard the M/V Delaware during exploratory fishing trips.

California Fishery Products Monthly Summary, February 1960, 12 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish; mackerel, and anchovies; pack of canned tuna, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; American Tuna Boat Association auction sales; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, February 1960, 12 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, March 1960, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for February 1960, 19 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

Seattle and Astoria--Landings, Receipts, and Value of Fishery Products, 1959, by Charles M. Reardon, 42 pp., processed. (Available free from the Market News Service, U. S. Fish and Wildlife Service, Pier 42, South, Seattle 4, Wash.) Reviews Pacific Northwest fisheries trends and their effect upon Seattle fishery products receipts for 1959; halibut landings; carload and truckload shipments of fishery products from Seattle by months; imports of canned fishery products at Seattle; and names, classifications, and standards as used on Seattle wholesale market. The Astoria section presents fisheries trends and products receipts for 1959; and landings and receipts of fishery products, 1959. The report also contains a number of statistical tables on fresh and frozen salmon receipts at Seattle, halibut landings, and ex-vessel landings by the otter-trawl fleet.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, March 1960, 7 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts,

with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria (Ore.), wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

## MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

### AMINO ACIDS:

"Separation of Derivatives of Amino Acids by Using Gas-Liquid Chromatography," by E. Bayer, article, Gas Chromatography, 1958, pp. 333-339, printed. Gas Chromatography, Academic Press, Inc., 111 5th Ave., New York 3, N. Y.

### ANTIBIOTICS:

"Determination of Antibiotic Residue in Fish," by Antonio Montefredine, Concetta Testa, and Imperia Morelli, article, Bollettino dei Laboratori Chiamici Provinciali Bologna, vol. 9, 1958, pp. 254-262, printed in Italian. Associazione Nazionale die Chiamici de C. N. A. Laboratori, Provinciali di Igiene e Profiassi, Via B. Triachini 17, Bologna, Italy.

"Determination of Tetracycline in Fish Preserved with Antibiotic," by Antonio Montefredine, Imperia Morelli, and Concetta Testa, article, Bollettino dei Laboratori Chiamici Provinciali Bologna, vol. 9, 1958, pp. 263-267, printed in Italian. Associazione Nazionale die Chiamici de C. N. A. Laboratori, Provinciali di Igiene e Profiassi, Via B. Triachini 17, Bologna, Italy.

The Use of Chlortetracycline in the Control of Spoilage in Ice-Stored Shrimp, by Mary H. Vance, William Saenz, and David L. Dubrow, Technical Series no. 28, 25 pp., illus., printed. State Board of Conservation, Tallahassee, Fla., June 1959. A report on experiments to determine the effect of CTC applied as a dip or incorporated into the storage ice in controlling shrimp spoilage and to develop suitable methods for the application of CTC under commercial fishing conditions. The pink shrimp (Penaeus duorarum) used in these experiments were obtained from a commercial shrimp vessel operating in the Tortugas area out of Key West, Fla. Results of the experiments indicate that shrimp treated with chlortetracycline will remain of acceptable quality for 4 to 7 days longer than non-treated shrimp.

### ARGENTINA:

"La Industria Pesquero-Conservera Argentina" (The Argentine Fish-Canning Industry), article, Industria Conservera, vol. 25, no. 246, December 1959, pp. 328-330, printed in Spanish. Industria Conservera, Calle Marques de Valladarez, 41, Vigo, Spain.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

#### BAIT:

Artificial Bait for Blue Crabs, by William Saenz, David L. Dubrow, and William J. Cerniglia, Special Service Bulletin No. 16, 7 pp., printed, Florida State Board of Conservation, W. V. Knott Bldg., Tallahassee, Fla., July 1959. This booklet tells of two years of experimentation on the development of an artificial crab bait. None of the chemicals tested proved effective. A more successful approach was the use of natural products, such as brewers' yeast, fish preserved in formalin, and dry-salted fish. Traps baited with dry-salted fish caught between 80 and 90 percent as many crabs as those baited with fresh or frozen fish. In the course of the investigation it was found that a convenient way of baiting the traps is by placing the bait in an empty can in which holes have been punched on the sides and bottom. The bait in the can attracts crabs but is not consumed by the first individuals entering the trap. This device allows the use of smaller quantities of bait and preparation of the cans beforehand, so that less work is required on the boat.

#### BRITISH GUIANA:

The Trawl Survey Carried Out by the R/V CAPE ST. MARY Off British Guiana, 1957-59, Part I--Summary of the Survey, by W. G. Mitchell; Part II--The Interpretation of the Catch Records, by R. H. McConnell, Bulletin No. 2, 51 pp., illus., printed, BG\$1 (about 58 U. S. cents). The Fisheries Division, Department of Agriculture, Georgetown, British Guiana. Results of the survey outlined in this report indicate that trawling grounds extend out 30-40 miles from the coast of British Guiana, including an area of about 5,000 square miles. For best results, trawlers must have sufficient power to tow the trawl against wind and tide. Analysis of the catch showed that 200 species of fish were taken during the two-year survey. Of these, the principal species landed were the croaker, sea trout, and bangamary. The grounds have an average potential production of over 300 pounds of marketable fish per fishing hour throughout the year.

#### CANADA:

British Columbia Catch Statistics, 1959 (By Area and Type of Gear), 158 pp., illus., processed, Department of Fisheries, 1110 W. Georgia St., Vancouver 5, B. C., Canada, February 5, 1960. The ninth annual report of fish-catch statistics for British Columbia based on Departmental copies of sales slips that are completed by all commercial fish buyers operating within the Province. The following information is contained in this report: summary of landings by district and total landed value of all fish; highlights of catch statistics--a general review of fishing in each area; and detailed district and area monthly statistics by type of gear. Certain economic, weather, and conservation factors that have a bearing on the catch are also reviewed.

#### CARP:

"Elevage de la Carpe à Madagascar" (Carp Breeding in Madagascar), by A. Kiener, article, Bulletin de Madagascar, vol. 10, no. 165,

Februàry 1960, pp. 125-147, illus., printed in French. Bulletin de Madagascar, M. le Directeur de l'Imprimerie Officielle, Tananarive, Madagascar (Malgache Republic).

#### CEYLON:

"Ceylon Modernizes Her Fisheries", by I. V. MacDonald, article, Foreign Trade, vol. 113, no. 7, March 26, 1960, pp. 20-21, illus., printed, Queen's Printer, Government Printing Bureau, Ottawa, Canada.

#### CHEMICAL COMPOSITION:

"Sodium and Potassium in Salt-Water Fish", by Lennie M. Oglesby and Agnes C. Bannister, article, Journal of the American Dietetic Association, vol. 35, November 1959, pp. 1163-1164, printed, Journal of the American Dietetic Association, American Dietetic Association, 620 North Michigan Ave., Chicago 11, Ill.

"Variations in the Sodium and Potassium Content of the Muscle Tissue of Pacific Salmon with Particular Reference to Migration", by R. A. MacLeod, R. E. Jonas, and J. R. McBride, article, Canadian Journal of Biochemistry and Physiology, vol. 36, no. 12, December 1958, pp. 1257-1258, printed, Canadian Journal of Biochemistry and Physiology, National Research Council, Ottawa, Canada.

#### COLD STORAGE:

"Studies on a Jacketed Cold-Storage Room", by J. W. Slavin, J. A. Peters, and S. R. Pottinger, article, Food Technology, vol. 12, no. 11, November 1958, pp. 602-611, printed, Food Technology, The Garrard Press, 510 North Hickory, Champaign, Ill.

#### CONTAINERS:

"Cleaning Aluminum Fish Containers", by R. J. Nachenius, article, Annual Report, Fishing Industry Research Institute, no. 11, 1958, p. 13, printed, Fishing Industry Research Institute, University of Cape Town, Rondebosch, Union of South Africa.

#### DEHYDRATION:

"Vers des Applications Industrielles de la Cryo-Dessication à la Deshydratation des Produits Alimentaires" (Commercial Applications of the Freeze-Drying Process for Dehydration of Food Products), article, La Revue de la Conserve, no. 7, September 1957, pp. 67-68, printed in French. La Revue de la Conserve, 1 rue de la Reale, Paris 1, France.

#### DIETARY LEVELS:

Dietary Levels of Households in the West, Household Food Consumption Survey 1955 Report No. 10, 68 pp., illus., processed, 45 cents. U. S. Department of Agriculture, Washington, D. C., July 1957. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The nationwide survey of household food consumption on which this report is based was made in April-June 1955 by the U. S. Department of Agriculture. Some data on dietary levels of fish and other high-protein foods are included. Fish is not shown separate-



THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

ly but appears in the combined category of "meat, poultry, fish."

#### DRYING:

"Continuous High Vacuum Drying Techniques," by F. Fixari, W. Conley, and G. Bard, article, *Food Technology*, vol. 13, March 1959, pp. 217-220, printed. Food Technology, The Garrard Press, 510 North Hickory, Champaign, Ill.

"Drying Fish and Beef Prior to Solvent Extraction," by L. K. Arnold, and Pong R. Hsia, article, *Journal of Agricultural and Food Chemistry*, vol. 6, no. 3, March 1958, pp. 231-232, printed. *Journal of Agricultural and Food Chemistry*, American Chemical Society, 1155 16th St., N. W., Washington 6, D. C.

#### ELECTRICAL FISHING:

"Die Verwendung von Leitungsstrom zur Elektrofischerei" (The Use of Direct Current for Electrofishing), by H. W. Hattop, article, *Deutsche Fischerei Zeitung*, vol. 5, no. 9, September 1958, pp. 265-268, illus., printed in German. *Deutsche Fischerei Zeitung*, Neumann Verlag, Radebeul, Dresden, E. Germany.

"Wo Steht Gegenwartig die Elektrofischerei?" (What is the Present State of Electrical Fishing?), by P. F. Meyer-Waarden, article, *Protokolle zur Fischereitechnik*, vol. 5, no. 22/23, October 1958, pp. 244-250, printed in German. Institut für Netzforschung, Hamburg, W. Germany.

#### EUROPEAN COMMON MARKET:

"L'Industrie de la Pêche Belge et l'Application du Marche Commun" (The Belgian Fishing Industry and the Effect of the Common Market), article, *La Pêche Maritime*, vol. 38, no. 981, December 1959, pp. 763-775, illus., printed in French. *La Pêche Maritime*, 190, Boulevard Haussmann, Paris (8<sup>e</sup>), France.

"Les Pays du Marche Commun" (The Common Market Countries), article, *La Pêche Maritime*, vol. 39, no. 984, March 1960, pp. 147-149, printed in French. *La Pêche Maritime*, 190 Boulevard Haussmann, Paris, France. Includes sections on fishery developments in West Germany, Netherlands, Belgium, and Italy.

#### FISH-LIVER OILS:

*Refined Shark-Liver Oil and Vitamin A Concentrates*, by S. Mahdihassan and others, British Patent No. 810,643, March 18, 1959. Her Majesty's Patent Office, London, England.

#### FISH MEAL:

"Vergleichende Untersuchung Einiger Methoden zur Feststellung des Fett-Gehaltes in Fischmehl" (Comparative Investigation about Methods for the Determination of Fat in Fish Meal), by A. F. M. G. Luijpen, D. Hooghiemstra-Brasser, and A. C. Hindriks, article, *Fette, Seifen, Anstrichmittel*, vol. 60, no. 10, October 1958, pp. 10-12, printed in German. Industrieverlag von Hernhausen K. G., Hamburg 11, W. Germany.

#### FISH SAUSAGE:

"Les Saucisses de Thon," (Tuna Sausages), article, *La Pêche Maritime*, vol. 37, no. 965, August 1958, 1 p., illus., printed in French. *La Pêche Maritime*, 190 Boulevard Haussmann, Paris 8, France.

#### FISH SCRAP:

"Recovery of Blood and Fish Body Solids from Blood Water by a System of Heat Coagulation," by J. M. Fourie, article, *Progress Report No. 42*, 4 pp., printed. Fishing Industry Research Institute, University of Cape Town, Rondebosch, Union of South Africa.

#### FISH SOLUBLES:

"New Fish Solubles Plant Added to Cannery Operation," article, *Feedstuffs*, vol. 31, October 17, 1959, p. 46, printed. *Feedstuffs*, Miller Publishing Co., 118 S. 6th St., Minneapolis 2, Minn.

#### FLOUNDER:

*Young Plaice Hauls off the English East Coast*, by R. S. Wimpenny, 22 pp., illus., printed, 6s. 6d. (about 91 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC 2, England, 1960. (Reprinted from *Fishery Investigations*, series 2, vol. 23, no. 1.) Presents results of exploratory trawling for plaice (flounder) on grounds off the South Sands of Bridlington Bay between 1949 and 1958.

#### FLYINGFISH:

"Note on a Technique for Catching Flying Fish at Night," by John B. Lewis, article, *West Indies Fisheries Bulletin*, no. 6, November/December 1959, pp. 9-10, processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad.

#### FOOD ADDITIVES:

*Principles and Procedures for Evaluating the Safety of Food Additives*, Publication 750, 12 pp., printed. National Academy of Sciences--National Research Council, 2101 Constitution Ave., Washington 25, D. C. A booklet on evaluating the safety of food additives which includes definitions of the terms *food additives*, *toxicity*, *safety*, and *hazard*; statement of principles as a guide to policy decisions in using additives; outlines of the kinds of investigation helpful in evaluating their safety; and principles for adapting an investigation to a particular additive and its expected use. The appendix discusses the functions of insignificant levels of chemical food additives.

"Some Pressing Problems Under the Food Additives Amendment of 1958," by Bernard L. Oser, article, *Food Technology*, vol. 13, November 1959, pp. 607-608, 609, printed. Food Technology, The Garrard Press, 510 North Hickory, Champaign, Ill.

*What Consumers Should Know About Food Additives*, Leaflet No. 10, 12 pp., illus., printed, 15 cents. U. S. Department of Health, Education, and Welfare, Food and Drug Administration,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Washington, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Included are sections on the history of the use of chemical preservatives; the contributions of food chemistry to better living; public health safeguards; and the latest legislation to regulate the use of food additives. Details are presented on the various types of additives such as vitamins, non-nutritive sweeteners, emulsifiers, and others; special classes of additives such as pesticides and coal-tar color; and requirements of label declaration when additives are used.

#### FOOD AND AGRICULTURE ORGANIZATION:

Technical Meeting on Fishery Cooperatives (Proceedings and Basic Working Papers), 228 pp., processed, limited distribution. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, December 1959. This, the first international meeting in its field, was held in Naples on May 12-21, 1959, and was co-sponsored by FAO and the International Labour Office. The report includes discussions and papers presented under the five agenda items and reprints of the four basic working papers commissioned for the meeting. The agenda items covered are: the Place of Cooperatives in the Economy of Fisheries; fishery Cooperatives and Government; Cooperative Education and Training in Fisheries; Organization and Management in Fishery Cooperatives; and general conclusions regarding fishery cooperatives and the future. The basic working papers deal with Fishery Cooperatives in Europe and North America; Education and Training for Fishermen's Cooperatives; and Business Organization and Management of Fishery Cooperatives.

#### FOOD CONSUMPTION:

Food Consumption and Dietary Levels of Households as Related to the Age of the Homemaker, United States--by Region, Household Food Consumption Survey 1955, Report No. 14, 134 pp., illus., processed, 75 cents. U. S. Department of Agriculture, Washington, D. C., 1959. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This report, the latest in a series based on the 1955 Department of Agriculture's food consumption survey, shows that peak expenditures for food are made by families in which the housewife is between 30 and 50 years old. This is true for fish and shellfish as well as for other food products. Data on "fish and shellfish" as a separate category are included in the tables.

#### FOOD PRODUCTION:

Food Production for Home Use by Households in the United States--by Region, Household Food Consumption Survey 1955, Report No. 12, 88 pp., illus., processed, 75 cents. U. S. Department of Agriculture, Washington, D. C., 1958. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This report, the twelfth in a series based on data gathered during a 1955 survey on household consumption, was prepared jointly by the

Agricultural Research Service and the Agricultural Marketing Service. Six thousand homemakers in the United States were interviewed. Information given on quantities and money value of foods used during the week preceding the interview was used in preparing the present report. Category of meat and poultry includes fish and game, but the latter two are not shown separately in any of the tables.

#### FOREIGN TRADE:

21st Annual Report of the Foreign-Trade Zones Board (to the Congress of the United States), 16 pp., printed, 15 cents, Foreign-Trade Zones Board, U. S. Department of Commerce Bldg., Washington 25, D. C., October 1959. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Annual report of the Foreign-Trade Zones Board for the fiscal year ended June 30, 1959, together with the reports covering operations during the same period of Foreign-Trade Zones located at New York, New Orleans, San Francisco, and Seattle.

#### FREEZING AND CANNING:

Home Freezing and Canning by Households in the United States--by Region, Household Food Consumption Survey 1955, Report No. 11, 72 pp., illus., processed, 45 cents. U. S. Department of Agriculture, Washington, D. C., 1957. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) The eleventh in the series of reports based on data gathered during the 1955 Household Food Consumption Survey conducted by the Department of Agriculture during the spring of 1955. Some data on preservation of fishery products in the home are included. Fish is not shown separately but appears in the combination category of "meat, poultry, fish or game."

#### FREEZING EQUIPMENT:

"Freezing Plant Aboard Factory Ships and Trawlers," by M. B. F. Ranken, article, Modern Refrigeration, vol. 61, no. 12, December 1958, p. 1234, printed. Modern Refrigeration, Maclaren House, 131 Great Suffolk St., London SE1, England.

#### FROZEN FOODS:

"The AFDOUS Code--A Review of Recommended Sections," article, Frosted Food Field, Vol. 29, October 1959, pp. 84-85, printed. Frosted Food Field, 321 Broadway, New York 7, N. Y.

#### GENERAL:

Color-Coding in Small Plants, by Joseph deFeher, Technical Aids for Small Manufacturers No. 69, November-December 1959, 4 pp., illus., printed. Small Business Administration, Washington 25, D. C. Several ways that color-coding can raise general industrial efficiency and bring about orderliness are highlighted in this leaflet. Recent improvements made possible by standardization of the color-coding system are reviewed. The uses of

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

colors for purposes such as safety measures, and marking of critical areas on machines, piping systems, resistors, temporary hazards, and dangerous substances are described.

#### GHANA:

Report of the Fisheries Division, Ministry of Food and Agriculture, 1958, 21 pp. and 5 charts, illus., printed, 3s. 6d. (about 49 U. S. cents). Government Printing Department, Accra, Ghana, 1960. Covers developments in sea fisheries, fishing harbors for power craft, fishing operations, freshwater fisheries, and the fisheries school, during 1958. In May of that year, the one hundredth motor fishing vessel to be registered in Ghana was launched.

#### HERRING:

The Herring of the Clyde Estuary, by Henry Wood, Scottish Home Department Marine Research No. 1, 1960, 24 pp., illus., printed, 8s. 6d. (about US\$1.19). Her Majesty's Stationery Office, 13A Castle St., Edinburgh 2, Scotland.

"Smalsildundersokelser i Nord-Norge med F/F Asterias hosten 1959" (Exploratory Fishing for Small Herring in Northern Norway with the Vessel Asterias during 1959), by Per Hognestad, article, Fiskets Gang, vol. 46, no. 4, January 28, 1960, pp. 53-59, illus., printed in Norwegian. Fiskets Gang, Postgiro nr. 691 81, Bergen, Norway.

#### ISRAEL:

Fishermen's Bulletin, vol. 3, no. 2 (22), December 1959, 36 pp., illus., printed in Hebrew with English abstracts. Fishermen's Bulletin, P. O. B. 609, Haifa, Israel. Includes, among others, these articles: "Refrigeration Processes in Fishing Vessels," by M. Bleiser; "Transport and Marketing of Red Sea Fish," by I. Ziskin; "Israeli Shrimp and Ink-Fish Exports in 1959;" and "Sardine Fishery in 1959," by Y. Ariav.

#### JAPAN:

Journal of the Tokyo University of Fisheries, vol. 45, no. 1, March 1959, 94 pp., illus., printed. The Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Tokyo, Japan. Includes, among others, articles on: "A Biological Study on a Japanese Edible Mantis-Shrimp, *Squilla oratoria* De Haan," by I. Kubo and others; "Zoogeographical Studies on the Demersal Fishes of the Tokyo Bay," by K. Takagi; and "Studies on the Fat Metabolism of Fish. 2--Histological and Chemical Studies on Fat and Phosphorous in Rainbow Trout," by T. Ono and others.

Journal of the Tokyo University of Fisheries, vol. 45, no. 2, March 1959, 137 pp., illus., printed. The Tokyo University of Fisheries, Shiba Kaigandori 6, Minato-ku, Tokyo, Japan. Includes articles on: "Polarographic Studies of Protein Contained in Aquatic Animal," by T. Kikuchi, T. Hirano, and I. Okada; "Studies on the Fat Metabolism of Fish. III--Relations Between Fat and Phosphorous in Rainbow Trout," by T. Ono and F. Nagayama; "Enzymatic Studies on the Glycolysis of Fish Muscle. II--Colorimetric Method for Determination of Sugars in Muscle," by F. Nagayama and

others; "Study on the Fish-Gathering Effects of Air Curtain," by Y. Imamura and M. Ogura; "Study on the Disposition of Fish Towards Light. III--The Strength of Illumination Comfortable to *Cololabis saira*," by Y. Imamura and A. Koike; "Study on the Disposition of Fish Towards Light. IV--The Strength of Illumination Comfortable to Mackerel and *Trachurus japonicus*," by Y. Imamura; "Study on the Response of *Trachurus japonicus* to Air-Bubbles," by Y. Imamura and M. Ogura; and "Determination of Time Required for Freezing of Skipjack," by K. Tanaka and J. Nishimoto.

Technical Report of Fishing Boat, No. 13, 123 pp., illus., printed in Japanese with English abstracts. Fishing Boat Laboratory, Fisheries Agency, Ministry of Agriculture and Forestry, Kasumigaseki, Chiyodaku, Tokyo, Japan, October 1959. Contains, among others, these papers: "Resistance Test of European Wooden Trawler (No. 2)," by N. Yokoyama and T. Kobayashi; "Self-Propulsion Test with European Wooden Small Trawler Models," by N. Yokoyama and E. Imanari; "Results of Measure Experiments by Several Meters on Net Shape of One-Boat Trawl Net (Danish Seine Net)," by C. Hamuro; "Study on Ultrasonic Waves Reflection Loss at Fish-Body Examination on Dimension of Fish-Body and Wave-Length," by Y. Maniwa; "Comparison between the Echo-Trace of Sea-Bottom by the 14 kc. Echo-Sounder and that by the Echo-Sounder of Ultra High Frequency Sound-Wave Which Has the Same Mechanism as the 14 kc. Echo-Sounder," by T. Hashimoto, Y. Maniwa, and M. Nishimura; "Detection of Fish by Sono-buoy," by T. Hashimoto, M. Nishimura, and Y. Maniwa; and "Technical Examination and Tentative Making of Fish-Finder for Tuna and Experiment on It on Sea," by T. Hashimoto and Y. Maniwa.

#### JELLYFISH:

"The Portuguese Man-of-War," by Charles E. Lane, article, Scientific American, vol. 202, no. 3, March 1960, pp. 158-168, illus., printed. Scientific American, Inc., 415 Madison Ave., New York 17, N. Y.

#### LAW OF THE SEA:

"La Deuxieme Conference de Geneve Etablira-t-elle une Regle Universelle d'Etendue de la Mer Territoriale et de la Zone Contigue?" (Will the Second Conference at Geneva Establish a World-Wide Law to Extend the Territorial Sea and Contiguous Zone?), article, La Pêche Maritime, vol. 39, no. 984, March 1960, pp. 129-132, printed in French. La Pêche Maritime, 190 Boulevard Haussmann, Paris, France.

Second United Nations Conference on the Law of the Sea (Synoptical Table Concerning the Breadth and Juridical Status of the Territorial Sea and Adjacent Zones), A/CONF. 19/4, February 8, 1960, 14 pp., printed. United Nations International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.

#### MACKEREL:

"Line Fishery for Mackerel," by C. Nedelec, article, Science et Pêche, no. 63, October 1958,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

4 pp., printed in French. Science et Pêche, L'Institut Scientifique et Technique des Pêches Maritimes, 59 Avenue Raymond-Poincaré, Paris 16<sup>e</sup>, France.

#### MUSSELS:

"Nebennutzungen in der Binnenfischerei: Muschelwerbung" (Secondary Exploitation in the Fresh-Water Fishery: Mussel Fishing), by B. Rogge, article, *Deutsche Fischerei Zeitung*, vol. 5, no. 9, September 1958, pp. 279-281, illus., printed in German. Deutsche Fischerei Zeitung, Neumann Verlag, Radebeul/Dresden, E. Germany.

#### NETS:

"Bisherige Erfahrungen mit Netzen aus Chemisch Veränderter Baumwolle" (Experience to Date With Nets Made of Chemically-Treated Cotton), by A. von Brandt, article, *Wissenschaftliche Informationen für die Fischereipraxis*, vol. 5, no. 4, July/August 1958, pp. 118-122, printed in German. Bundesforschungsanstalt für Fischerei, Hamburg 36, W. Germany.

"The Effect of Dyeing on the Efficiency of Gill Nets and Long Lines Made of Perlon Monofilament," by G. Kajewski, article, *Fischereiforschung*, vol. 1, no. 1, August 1958, p. 19, printed in German. Fischereiforschung, Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, E. Germany.

"Tabellen zur Gewichtsberechnung von Baumwollnetzen unter Berücksichtigung eines Einstellungsverhältnisses" (Tables for Calculating the Weight of Cotton Nets Under Consideration of a Certain Hanging Coefficient), by K. Schmidt and K. Auwand, vol. 5, no. 4, April 1958, pp. 100-104, printed in German. Deutsche Fischerei Zeitung, Neumann Verlag, Radebeul/Dresden, E. Germany.

#### NORTHERN RHODESIA AND NYASALAND:

(Joint Fisheries Research Organisation) *Annual Report No. 8, 1958*, 61 pp. and 2 maps, illus., printed, 5s. (about 70 U. S. cents). Joint Fisheries Research Organisation, Salisbury, Rhodesia, 1959. This is the eighth report by the Joint Fisheries Research Organisation of Northern Rhodesia and Nyasaland but the first appearing as a separate publication. The seven previous reports were incorporated into the annual reports of the Game and Tsetse Control Departments in each territory. The present summary covers activities of the Organisation in Northern Rhodesia, such as development of Lake Bangweulu and its swamp fishery, progress of the Zambezi Valley surveys, and operation of the Flyongole Fish Farm. Also describes activities of the Organisation in Nyasaland during 1958, such as investigations of distribution of fish larvae, hydrology and plankton, and the fishes of Lake Nyasa. Includes four papers on fisheries of the region and a list of publications by members of the Organisation.

#### NORWAY:

*Fylker og Landsdeler i Norge, Statistisk Belyst*, (Statistical Report on Counties and Land Area in Norway), by Hans Luhn, 69 pp., illus., printed in Norwegian. Arbeidsdirektoratet, Oslo, Norway, December 1958. A report covering statistical data on industry, agriculture, commerce, health, climatic conditions, and other aspects of life in the Norwegian counties. Includes a chapter on fishing, with details of volume and value of catch by species for coastal and distant-water fisheries.

way, December 1958. A report covering statistical data on industry, agriculture, commerce, health, climatic conditions, and other aspects of life in the Norwegian counties. Includes a chapter on fishing, with details of volume and value of catch by species for coastal and distant-water fisheries.

#### OREGON:

*Research Briefs*, vol. 7, no. 1, July 1959, 82 pp., illus., printed. Fish Commission of Oregon, 307 State Office Bldg., Portland 1, Ore. Contains, among others, articles on: "Time of Spawning, Length of Maturity, and Fecundity of the English, Petrale, and Dover Soles (*Parophrys vetulus*, *Eopsetta jordanii*, and *Microstomus pacificus*, respectively)," by George Y. Harry, Jr.; and "The 1955-1956 Silver Salmon Run Into The Tenmile Lakes System," by Alfred R. Morgan and Kenneth A. Henry.

#### POISONOUS FISH:

"Poisonous Fishes in the Caribbean Area," by A. C. Ellington, article, *West Indies Fisheries Bulletin*, no. 6, November/December 1959, pp. 1-5, processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad.

#### PRESERVATION:

"Nouvelles Methodes de Conservation du Poisson" (New Methods of Fish Preservation), article, *La Pêche Maritime*, vol. 37, no. 061, April 1958, 1 p., printed in French. La Pêche Maritime, 190 Boulevard Haussmann, Paris 8, France.

#### PROTEINS:

*Dehydrated Edible Fish Proteins*, by Raimund Vogel and Klement Mohler, U. S. Patent No. 2,875,061, Feb. 24, 1959. U. S. Patent Office, Washington 25, D. C.

#### REFRIGERATED VESSELS:

"The Chilling and Storage of Fish on Refrigerated Trawlers," by G. Konokotin, article, *Kholodil'naia Tekhnika*, no. 6, 1959, pp. 24-28, illus., printed in Russian with brief English summary. Kholodil'naia Tekhnika, c/o Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

#### SALMON:

"The Earliest of Salmon," by William B. Currie, article, *Scotland*, vol. 4, no. 3, March 1960, pp. 45-47, illus., printed. 1 Castle St., Edinburgh 2, Scotland. A short description, for anglers, of the spawning habits of and best spots for catching the early-running Atlantic salmon in Scotland's rivers and lakes.

"Zur Technologie des Lachsfanges" (Technology of Salmon Fishing), by J. Zaucha and G. Kajewski, article, *Fischereiforschung*, vol. 1, no. 2, September 1958, pp. 1-7, illus., printed in German. Fischereiforschung Institut für Hochseefischerei und Fischverarbeitung, Rostock-Marienehe, E. Germany.

#### SANITATION:

"Up-To-Date Sanitation Processes," by W. J. Dixon, article, *Canner and Freezer*, no. 126,



THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

June 1958, pp. 18-20, printed. Canner and Freezer, 105 W. Adams St., Chicago 3, Ill., U. S. A.

#### SARDINES:

"Sardine Canners' Program Hits Top-Quality Bull's-Eye," by Arthur V. Gemmill, article, *Food Engineering*, vol. 32, no. 3, March 1960, pp. 78-81, illus., printed. Food Engineering, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. Describes how Maine sardine processors are going "all out" to finance quality control and inspection services. They have adopted mandatory grading that almost completely eliminates any sub-standard products. A good deal of money is being spent on research and promotion. "Sardines from Maine" are becoming a familiar item on food store shelves throughout the country.

#### SEALS:

An Attempt Towards a Revision of the Systematics and Diagnostic Features of Seals Belonging to the Subfamily PHOCINAE, by K. R. Chapskii, translation no. NRCC C-2330, 10 pp., processed. (Translated from Trudy Zoologicheskogo Instituta, Akademiya Nauk SSSR, vol. 17, 1955, pp. 160-169.) SLA Translation Center, The John Crerar Library, 86 E. Randolph St., Chicago 1, Ill.

#### SHRIMP:

The Tortugas Shrimp Fishery: The Fishing Fleet and Its Method of Operation, by E. S. Iversen and C. P. Idyll, Technical Series No. 29, 37 pp., illus., printed. State Board of Conservation, Tallahassee, Fla., June 1959. This report gives the background for the establishment of a measure of the relative quantities of pink shrimp (*Penaeus duorarum*) on the Tortugas grounds, within seasons and between seasons. It describes the fleet engaged in the Tortugas pink shrimp fishery and includes data on the size and age of vessels in the fleet, vessel activity (i.e., fishing and selling practices), landings by day of the week, and length of fishing trips. Also described are mesh size of trawl nets, changes in the gear used, average size of shrimp landed, amount of small shrimp discarded, variation in the hours of darkness; occurrence of jellyfish and algae on the grounds, strength and direction of the wind, phases of the moon, and the regulation of fishing. These are described and considered in relation to their effect on estimates of catch per unit of effort.

#### SPINY LOBSTER:

"Le Conditionnement sous Vide des Queues de Langoustes a Bord du Langoustier-Congelateur Francoise-Christine" (The Processing Plant for Spiny Lobster Tails on Board the Freezer Vessel Francoise-Christine), article, *La Pêche Maritime*, vol. 39, no. 984, March 1960, pp. 156-157, illus., printed in French, *La Pêche Maritime*, 190 Boulevard Haussmann, Paris, France.

#### STANDARDS:

"Use of Grade Standards in the Quality Control of Fishery Products," by Mary E. Ambrose and Maurice Bender, article, *Food Technology*, vol. 13, May 1959, pp. 249-251, printed. Food Tech-

nology, The Garrard Press, 510 North Hickory, Champaign, Ill.

#### TRAWLERS:

"The Building of Large Fishing Trawlers," by E. M. Gorbenko, translation, *LLU Translation Bulletin*, vol. 2, no. 1, January 1960, pp. 25-41, illus., printed. (Translated from *Sudostroenie*, no. 5, 1959, pp. 33-37.) Lending Library Unit, Department of Scientific and Industrial Research, London, England.

#### TUNA:

"L'Organisation de la Campagne Thoniere 1959-60 a Dakar" (Planning the 1959-60 Tuna Fishing Season at Dakar), by Jehan Ichtus, article, *La Pêche Maritime*, vol. 39, no. 984, March 1960, pp. 133-138, illus., printed in French. *La Pêche Maritime*, 190 Boulevard Haussmann, Paris, France.

#### UNITED KINGDOM:

Fishing, Choice of Careers, no. 90, 40 pp., illus., printed, 1s. 9d. (about 25 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway, London WC2, England, May 1959. An informative booklet for young man trying to make a choice of careers. The hazards and loneliness as well as the rewards of a seafaring life are pointed out. Sections of the booklet are devoted to the apprenticeship, drifters and drifter-trawlers, seine fishing, other types of fishing, the crew of a trawler, training programs and courses offered at fishing ports, and further information and advice. Some excellent photos of activities on board fishing vessels are included.

Fishing in Distant Waters (Report on the British Fishing Industry Distant Water Trawlers) 1958, 48 pp., illus., printed. British Trawlers' Federation, Ltd., Grimsby, England. An unusually fine booklet describing, with the aid of a variety of photos and charts, the accomplishments and events of interest in the British distant-water trawling industry during 1958. Included are sections on a general survey of the industry; the fishery limits; the year in the ports of Fleetwood, Grimsby, and Hull; safety and rescue work of the trawlers; the business of fishing; and the full text of the Convention adopted at the First United Nations Conference on the Law of the Sea. The economic significance of the industry is stressed, as well as work done by the trawlers incidental to catching fish.

The Fishing Industry in Britain, 5 pp., No. R. 4288, printed. Reference Division, Central Office of Information, London, England, October 1959. A short survey of the fishing industry in Great Britain covering fishing ports, methods of sea fishing, the fleet, landings and imports of fishery products, fresh-water fisheries, and the distribution system. Also described briefly are promotion and regulation of the industry, the 1959 Northeast Atlantic Fisheries Conservation Convention, and whaling activities.

White Fish Authority Account, 1957-58, 3 pp., printed, 4d. (about 5 U. S. cents). Her Majesty's Stationery Office, York House, Kingsway,



THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

London WC2, England. Describes briefly legislation pertaining to grants for fishing vessels and engines for operations in the white fish groundfish industry. A chart shows receipts and disbursement of funds for such aid during the year ended March 31, 1958.

#### WHALE MEAT:

"Determination of the Time Required for Freezing Whalemeat," by K. Tanaka and J. Nishimoto, article, Bulletin de L'Institut International du Froid, 10th International Congress of Refrigeration, vol. 39, 1959, pp. 902, 904, printed in English and French. Bulletin de L'Institut International du Froid, 177, Boulevard Malesherbes, Paris 17, France.

#### WHALES:

The Scientific Reports of the Whales Research Institute, no. 14, 333 pp., illus., printed. The

Whales Research Institute, Tokyo, Japan, September 1959. Includes, among others, articles in English on: "Humpback Whales in Ryukyuan Waters," by M. Nishiwaki; "Food of Baleen Whales with Reference to Whale Movements," by T. Nemoto; and "Distribution of Amino Acid in Proteins from Various Parts of Whale Body," by T. Nakai.

#### WISCONSIN:

Wisconsin Conservation Bulletin, vol. 25, no. 1, January 1960, 37 pp., illus., printed. Wisconsin Conservation Department, State Office Bldg., Madison 1, Wis. Includes, among others, these articles: "Ice Fishing for Panfish," by Roland B. Stewart and Leonard J. Druschba; "What's New in Fish Management," by C. W. Threinen; "Some Views on the Whitefish Fishery," by George R. King; and "Wisconsin's Dangerous Mollusks," by Margaret C. Teskey.



### EAT FISH FOR HEALTH

A recent book, Eat Well and Stay Well, by Dr. and Mrs. Ancel Keys, with a foreword by the distinguished heart specialist, Dr. Paul Dudley White, presents, in a layman's language, the latest medical discoveries about how diet affects heart, arteries, and blood cholesterol. This book also presents a number of recipes, each with calorie count and number of grams of protein and fat.

Of particular interest to the fish merchandiser is the chapter on fish and seafood, wherein the authors give "three major reasons why fish is of merit"--

(1) "Fish contains only about half the calories of an equal weight of beef or pork--so you may 'eat hearty'."

(2) "Fish provides excellent proteins at high concentration."

(3) "Not only are fish generally low in fat, such fat as they contain does not raise the blood cholesterol level like meat and dairy fats."

Editorial Assistant--Ruth V. Keefe

Illustrator--Gustaf T. Sundstrom

Compositors--Jean Zalevsky, Alma Greene, and Vera Eggleston

\* \* \* \* \*

Photograph Credits: Page by page, the following list gives the source or photographer for each photograph in this issue. Photographs on pages not mentioned were obtained from the Service's file and the photographers are unknown.

P. 1--M. McClean, Wheatley, Ontario; p.8--Ewell Studio, Milan, Ohio.

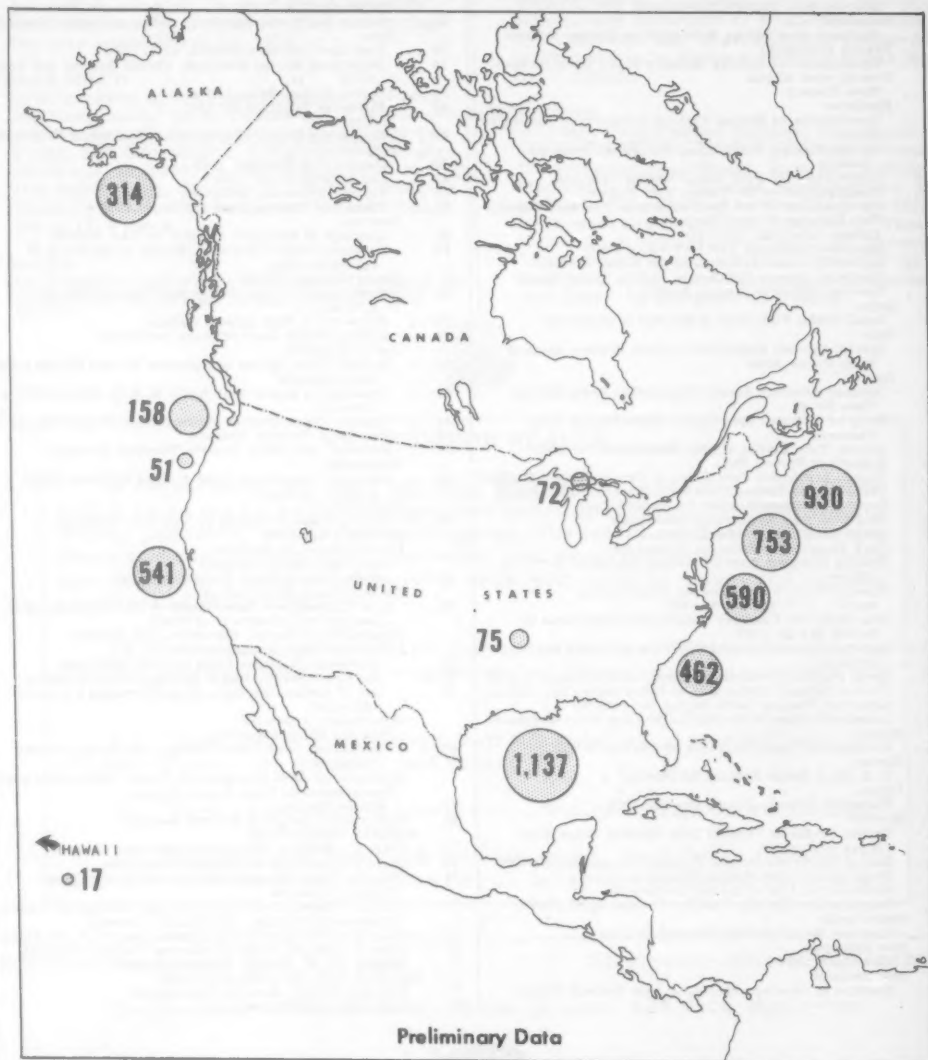
## CONTENTS (CONTINUED)

Page	FOREIGN (Contd.):	Page	FOREIGN (Contd.):
	Cuba (Contd.):		Norway:
43 ..	Closed Season on Shrimp Trawling and Several Species of Fish	58 ..	Winter Herring Landings Lowest in 15 Years
	Denmark:	58 ..	One-Ninth of Herring Purse-Seiners Caught no Fish in 1960 Season
44 ..	Herring Meal Exports Threatened		Pakistan:
	Ecuador:	58 ..	Survey for Mother-of-Pearl in Bay of Bengal Planned
44 ..	Exchange Regulations Moderated on Shrimp Exports		Peru:
	French Polynesia:	58 ..	Fish Meal Industry Trends, April 1960
44 ..	Development of Fishing Industry Under Consideration	59 ..	Exports of Marine Products, Fourth Quarter and Year 1959
	French West Africa:	59 ..	Ban on Shrimp Sales Lifted
44 ..	Tuna Fishery	59 ..	Fisheries Program for 1960
	Honduras:		Philippines:
45 ..	Restrictions on Shrimp Fishing Temporarily Suspended	60 ..	Ban on the Export of Ornamental Sea Shells Proposed
	Iceland:		Portugal:
45 ..	British Fishing Vessels Leave Fishing Banks off Iceland	60 ..	Canned Fish Exports, 1959
45 ..	Competition for Fish Stocks Causes Concern	60 ..	Canned Fish Pack, 1959
45 ..	Disagreement on Ex-Vessel Fish Prices	61 ..	Fisheries Trends, December 1959
46 ..	Events at Law of the Sea Conference Followed Closely	61 ..	Fisheries Trends, First Quarter, 1960
46 ..	Fish Farming Project Proposed		Sweden:
46 ..	Fishery Landings, 1957-59	61 ..	Landings of Mackerel Limited by Poor Market
46 ..	Manpower Shortage Felt by Fishing Fleet	62 ..	Research Vessel Resumes Studies on Spawning of Spring Herring
47 ..	Market for Herring Bought in the United States		Union of South Africa:
47 ..	Marketing Survey for Canned Fish in United States	62 ..	Steel Vessel of New Design for Pilchard Fishery
47 ..	Trawler Officers' Dispute Settled		U. S. S. R.:
	India:	62 ..	Fisheries in East Asiatic Waters
48 ..	Small Model Fish-Meal Plant Now in Operation	63 ..	Fishing Fleets Need Officers and Crews
	Italy:		United Kingdom:
48 ..	Special License Suspended on Most Fishery Imports from Dollar Area	63 ..	British Firm Agrees to Purchase Frozen Fillets from Faroe Islands
	Japan:	64 ..	Trawlers to Supply Fish for U. S. S. R. Frozen Fillet Contract
48 ..	Summer Albacore Season Expected to Begin Earlier Than Usual	64 ..	Fishery Loans Interest Rates Increased as of March 11
49 ..	Study of Albacore Spawning in Bonin Islands Area Planned	64 ..	New Stern Trawler Praised
49 ..	Frozen Tuna Export Quotas Established for 1960	65 ..	Peruvian Fish Meal Imports Threaten Industry
50 ..	Exports of Frozen Tuna		Venezuela:
50 ..	Canned Lightmeat Tuna Price to Canada Raised Slightly	65 ..	Japanese-Venezuelan Tuna Fishing Company Plans Addition to Fleet
50 ..	Third Sale of Canned Tuna for Export to United States		Viet-Nam:
50 ..	Study of Overseas Market for Canned Tuna	65 ..	Fishing Fleet Increased by Two New Trawlers
50 ..	Policy on Tuna Mothership Operations		FEDERAL ACTIONS:
51 ..	Large-Size Tuna Vessel Launched		Department of Commerce:
51 ..	Crab Factoryship Sails for Bristol Bay		Coast and Geodetic Survey:
51 ..	Fishing Company Starts Trawling Operation in North Africa	66 ..	Fleet Sails to Chart Coastal Waters
	Africa:		Federal Trade Commission:
51 ..	Fishing Vessels Licensed for Construction, April 1, 1959-March 31, 1960	66 ..	Crab Fishermen's Association in State of Washington Charged with Restraint of Trade
52 ..	Fish Meal and Flounder Factoryship Operations in Bering Sea for 1960		Department of Health, Education, and Welfare:
52 ..	Herring Catch of About 9,000 Tons in Bering Sea Expected		Food and Drug Administration:
52 ..	North Pacific Mothership Salmon Fleet Reduced in 1960	67 ..	Additional Petitions Filed on Food Additives
53 ..	Former Salmon Mothership to Enter Bering Sea Fishery	67 ..	Petition Filed for Use of Resins in Food Industry
53 ..	Antarctic Whaling Catch Higher for 1959/60	67 ..	Use of Sodium Nitrite in Cured Tuna and Pet Food Extended
53 ..	License for New North Pacific Whaling Fleet Requested		Department of Interior:
	Korea:		Fish and Wildlife Service:
54 ..	Processors Close Contracts for Shrimp in April	68 ..	Season for Land-Based Whaling for Baleen Whales Changed
	Kuwait:		International Joint Commission (United States and Canada):
54 ..	U. S. Firm Starts Fishing for Shrimp		Passamaquoddy Tidal Power Project:
	Libya:	68 ..	Public Hearing
54 ..	Fisheries Trends, Fourth Quarter 1959	68 ..	Eighty-Sixth Congress (Second Session)
	Mexico:		FISHERY INDICATORS:
55 ..	Decree Prohibits Vessels from Fishing within Nine Miles of Border	73 ..	Chart 1 - Fishery Landings for Selected States
55 ..	Gulf of California Shrimp Fishery Trends, March 1960	74 ..	Chart 2 - Landings for Selected Fisheries
56 ..	Spiny Lobster and Abalone Fisheries Trends	75 ..	Chart 3 - Cold-Storage Holdings and Freezings of Fishery Products
56 ..	Statement on Law of the Sea Conference	76 ..	Chart 4 - Receipts and Cold-Storage Holdings of Fishery Products at Principal Distribution Centers
56 ..	Tampico Area Shrimp Fishery Trends, April 1960	76 ..	Chart 5 - Fish Meal and Oil Production--U. S. and Alaska
	Netherlands:	77 ..	Chart 6 - Canned Packs of Selected Fishery Products
57 ..	Japanese May Purchase Whaling Vessels	78 ..	Chart 7 - U. S. Fishery Products Imports
	New Hebrides:		RECENT FISHERY PUBLICATIONS:
57 ..	Tuna Operations	79 ..	Fish and Wildlife Service Publications
	New Zealand:	81 ..	Miscellaneous Publications
58 ..	Reaction to Japanese Fishing in New Zealand Waters		



# UNITED STATES CATCH BY AREAS, 1959

(Figures represent million pounds)



m

